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Original Contributions.

GOLD FILLINGS.

BY J. V. CONZETT, D.D.S., DUBUQUE, IOWA.

It has become the style among a certain class of operators in these last days to assert that the age of the gold filling has passed away and they have advised their followers from time to time to throw away their gold pluggers. Some poor misguided fellows followed their advice during the heyday of the porcelain inlay and then later were to be seen sneaking around the ash pile hunting their discarded pluggers; and now, again, while the profession is having its perennial spasm of rushing after that which is new and forgetting for the time the good old things that have stood the test of time and the stress of trial, we are told that the gold inlay made according to the Taggart method is going to do away with the gold filling, and again the advice is given to "throw away your gold pluggers."

All I have to say in regard to that is—*don't*. I believe in trying new things and proving them. I do not think much of the man that is so conservative that he never attempts anything that was not taught him during his college days, but neither have I any use for the man that rushes after every new thing, embraces it enthusiastically, throws away his old friends, and finds to his chagrin that his new, in too many cases, is not to be relied upon.

Porcelain was to have supplanted gold. But now we know that, except in a few selected places, porcelain is absolutely useless as a permanent filling, and even in the selected cases we have to be guarded in our assurances of its permanency to our patients.

The gold inlay, owing to its greater inherent strength and more

perfect adaption, when made by the Taggart method, is undoubtedly a very much better filling than the porcelain inlay, and I can readily see how men who have never been successful in making a good gold filling should welcome it with greatest enthusiasm. It is a good filling; it has a place, and I believe a very large place, in dentistry; and, I believe also, that in certain cases it is much better than a gold filling, for in some instances it will save a tooth that could not be saved with gold. But I do not believe, however, that it will ever supplant the gold filling, and the man who can make a good gold filling and abandons its use for the use of the inlay, in my judgment, is not wise. On the other hand, the man that cannot make a good gold filling to save his life had better abandon the use of gold as a filling material and use the inlay, for the inlay by reason of its cement lining will save the tooth as long as it stays in, while a poor gold filling is a failure from the moment it is inserted. I know that men have arisen and have said it is impossible to make a gold filling that will perfectly seal the tooth, and they have given us the results of the experiments that they have made, which prove nothing except that the man that made the gold filling did not know how to use his material, and the best thing he could do was to do what he was doing, giving it up and using a cemented filling. But we know that a gold filling can be made that will perfectly seal the cavity, for every member of the G. V. Black Club has done it under test, and what we have done any man can do, if he will train himself in the proper manner of making a gold filling.

I do not wish to be understood as in any way decrying the gold inlay. I believe, as I said before and as I repeat by way of emphasis, that it has a large place in dentistry and that the name of Dr. Taggart will go down to undying fame in the history of dentistry as its perfecter.

But I do want to urge the profession, and the younger men thereof especially, not to abandon such an old tried friend as gold. I had the very great pleasure, while in New York in attendance upon the annual clinic of the First District Dental Society, of inspecting a number of gold fillings that had been placed in the teeth of a gentleman by Dr. Guilford of Philadelphia over twenty-five years ago. The fillings were as perfect and as beautiful as if they had been made last year. This is but one of numberless cases. A material that, placed in badly decayed teeth, will preserve them in

comfort and usefulness for that length of time is not to be lightly thrown aside.

St. Paul says, "Prove all things, hold fast that which is good." So, as new methods and devices come up, test them, try them, and if they prove themselves good, by all means use them and hold fast to them; but also hold fast to the old things that have proven good. The reason so many men are willing to abandon gold is because of their many failures in its use, and they speak of the difficulty of its use. They are willing to admit that the material in the hands of certain experts is all that is to be desired as a tooth saver, but they are not willing to make themselves masters of the material, as the experts have. For such men, men who are not willing to pay the price of study and experiment in mastering an acknowledged good thing, I have only the most profound pity. Such men will never amount to anything in any profession, neither will they ever attain any great proficiency in the use of any material. For as there is no royal road to knowledge, there is no easy road to professional success. There may be short-cut methods to reach your patient's pocketbook, but I do not look upon the man with the largest bank account as being always the best dentist.

The very fact that a thing is hard to master should be an incentive to spur us on to a determination to overcome it. Gold is a hard material to use if you do not rightly use it, but having studied the laws governing its use and having made yourself master of a technique in accordance with those laws, it becomes one of the most tractable servants and produces results that are the most permanent that we are able to produce with any material.

The great argument that is made by the inlay man is that the time necessary to make a gold filling is so great that it is too great a strain upon the patient and is not sufficiently remunerative to the dentist. It is too true that most men spend too much time over a gold filling, wearing themselves and their patients to a frazzle and are consequently not able to get a price that is adequate for the time and energy expended, but these things ought not so to be. I scarcely ever keep a patient in my chair over one hour for the largest gold filling, and I have frequently made fillings of gold in cavities in molars and bicuspid in half an hour and can produce the goods upon demand, and I believe that I can take any man of average ability and intelligence and teach him to do the same, for I, myself, am only of average intelligence and ability.

Now I know that you cannot beat that in making an inlay, so that argument falls to the ground—happily for the good of the profession, for I verily believe that it would be a professional calamity were we to lose the knowledge of the use of gold. There are men who are alive to the possibilities of gold as a filling material and in different sections of this country we have bands of men who have formed clubs for the study of gold as a filling material. These men are becoming proficient in the use of gold, but not only that, that is one of the smallest factors, the knowledge they are gaining in these clubs and the experience and character which is becoming theirs as they surmount the difficulties that present themselves, is making of these men not only splendid operators in the filling of teeth, but it is making them better dentists in every particular. As a result of their experience they become better inlay men, better crown and bridge men as well as masters of the art of filling teeth. Just as the introduction of rubber played havoc with the art of prosthodontia, so would the introduction of the inlay ruin the operative dentist if it took from him the ability to use gold foil. "To him that overcometh shall be the crown."

DENTISTRY AS A TRUE SPECIALTY OF MEDICINE.

BY MORRIS I. SCHAMBERG, D.D.S., M.D., NEW YORK CITY. READ BEFORE
THE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSO-
CIATION, JUNE, 1907, AND PUBLISHED BY COURTESY
OF THE JOURNAL OF THE ASSOCIATION.

There is no subject more worthy of consideration, no time more fitting, no place better suited to the act, than the discussion now before the Section on Stomatology of the American Medical Association of the means whereby dentistry is to become a true specialty of medicine.

This departure from the customary form of address by the chairman is prompted by the importance of our deliberation on a theme which is so closely interwoven with the interest and the work of this section.

It is, indeed, unfortunate that the dental profession, of which we are justly proud, is not represented in this Section by a greater membership, since the degree in medicine is not an essential to eligi-

bility. Many of the active members of this Section are men who hold both medical and dental degrees. There are many more men, however, in and out of this Association who, with but the degree of dentistry, are sufficiently broad in their views, scientific in their work, and practical in their ideas, to see the need for the change that will place stomatology on an equal basis with the other specialties in medicine.

In 1881 the American Medical Association recognized stomatology as a distinct branch of medicine, and this Section, to which you are at present lending your interest, was organized. Since that time much good has been accomplished by the publication in *The Journal* of the American Medical Association of papers which, bearing on the correlation of oral and systemic disease, have opened the purely medical eye to the work that is being done by the exponents of dentistry. It now becomes the duty of this Section to open the purely dental eye to the method by which dentistry, or rather stomatology, can be made a still greater credit to the men who practice it, a more honored branch of medicine and a specialty which will render a greater service to human kind.

So long as dentistry remains a separate profession from medicine, so long will differences exist between the medical man and the dentist, so long will dentistry be viewed as the less scientific, so long will its mechanical attainments stand out as paramount and its therapeutic value prove insignificant.

The wonderful strides made in dentistry have been along mechanical lines, and this, to some extent, at the expense of medical and surgical training. The evolution of dentistry from the mechanical age to the therapeutic and surgical age is inevitable. There was a time when the alleviation of dental ailments, like many of the minor surgical ills, was in the hands of the self-styled surgical barber, who practiced cupping, leeching and the extraction of teeth. Later it became necessary for an individual who wished to conduct such a practice to spend an apprenticeship in the office of a predecessor, who handed down to the succeeding generation methods, not alone for the relief of symptoms, but for the retention, restoration and substitution of the affected part.

Today in dentistry we pay humble recognition and respectful homage to those who have preceded us and who have done much to advance this noble science, and yet, without reflection on the

pioneers, we demand of those who would practice at the present time a degree, earned in a school after years of preparation and study; formerly one, then two, now three, and shortly it may be four years, to say naught of the increase of the preliminary requirements to entrance into dental schools.

With that which now comprises a complete course in dentistry we are but one step removed from the adoption of the full medical course with a supplementary two years devoted to dental studies. The two years thus spent would take the place of the medical practitioner's internship in a hospital and the specialist's year or two abroad. Medical men thus equipped themselves before embarking on their professional careers. How then can the stomatologist do less and hope to gain full recognition as a specialist of medicine?

It is the fear of your chairman that unless radical steps are taken to make dentistry a true specialty of medicine, ultimately there will be a marked distinction between stomatology and dentistry. Already there are many men who see the advantage of supplementing their dental training with the medical course, and stomatologic societies are being organized, composed mainly of practitioners holding the medical degree. This is attested by the following communication from abroad:

FIRST FRENCH CONGRESS OF STOMATOLOGY.

Dear Doctor:—The Stomatologic Society, wishing to celebrate the twentieth year of its foundation, has decided to organize a Congress of Stomatology in Paris, which will be held Aug. 1 to 5, 1907.

This congress will be the long awaited consecration of those professional ideas and scientific principles which our society has always defended ever since its formation. Its aim will be to demonstrate clearly that stomatology is a branch of medicine, a medical and surgical specialty, just as much as is ophthalmology, laryngology, etc., and requiring from its adepts a complete knowledge of medicine and including all the scientific studies which in all countries are recognized as essential for obtaining the degree of M.D.

The diseases of the mouth, teeth and jaws are closely related to other diseases and with the general pathology of the organism. A correct knowledge of this relation is necessary for all who practice dental service, or rather stomatology, with all that it includes. Special technical training is most necessary for the perfection of the surgeon and for any other specialist and is easily acquired by the learned physician, but must be secured by a rational method of instruction.

Stomatology includes all that is known in this specialty, whether technical or scientific, and the stomatologist applies all to the care of the mouth, teeth and adjacent parts. This scientific and practical conception of

our art, which is so obviously applicable to the public welfare, does not alone apply to the French stomatologists, but equally to a large number of stomatologists of other countries as well, whose works, publications and scientific societies have long since shown us their high medical culture and professional standing.

We hope that our First Congress of Stomatology will be honored by your presence; for it is only by the united efforts of all our confrères from all other countries that its real value and significance will be established. Your presence will indicate the general character of our aims. The medical tie unites us all in one common sympathy and brotherhood, which will insure unity and success of our cause, which will be at the same time scientific, moral and social.

It would be, indeed, unfortunate if dentistry and stomatology should become divorced; your chairman believes that it would be one of the worst calamities that could befall both dentistry and stomatology. If this is the accepted opinion of this body it would be well for us, through delegates from our Section that will attend the French Congress of Stomatology, to pledge our support to any movement which will further the interests of dentistry and stomatology as a unit, and to oppose seriously any action that would tend to separate them.

It is to be hoped that the symposium on "The Medical Education of the Dentist," which will follow, will contain valuable suggestions pertaining to this important topic, and will elaborate a system by which dentistry can become an integral part of medicine without friction or disruption in the dental ranks.

Great accomplishments are acquired only through needful sacrifice, but in our deliberation let us see that all phases of the subject are carefully considered so that injustice is done no one. Let us appoint a committee to compile a report of the most practical suggestions presented at this meeting, to be sent to the French Congress of Stomatology, to the National Dental Association, and to the prominent dental journals, so that this important movement may not die an untimely death on the western shore of the Atlantic.

The brief and incomplete outline that I have drawn for the conversion of dentistry as a separate profession to stomatology as a specialty of medicine implies:

1. The elimination of all dental schools unassociated with medical colleges or universities.
2. The attendance of all dental students on the full course in

medicine instead of the present method of attending with the medical students the lectures on the elementary subjects.

3. The addition to medical schools of a chair of stomatology and a course on that subject to correspond with the amount of instruction given in ophthalmology, otology, rhinology, etc.

4. The purely dental and mechanical training to be acquired by a special course in the dental department, which will have its separate chairs in mechanical and operative dentistry, oral surgery, etc.

With the universal adoption by the better institutions of such a plan as this, little change in legislation controlling the practice of this specialty would be necessary. Those who are registered practitioners now would continue to practice, and with an increasing consideration and respect from the public as well as from their medical confrères, owing to the high station that the specialty had reached.

I will not dwell further on this subject, but will ask the most earnest consideration of this matter by this important body of dentists and stomatologists.

I cannot bring my remarks to an ending without making brief reference to the arduous and efficient services of our genial secretary, who has for many years conducted the duties of his office with the greatest degree of satisfaction to the members of our Section. May his health permit him to remain active in the work of the Section until the successful culmination of the movement which is so warm to his heart, and to which I beg your unrelenting efforts.

THE INTERRELATIONSHIP OF MEDICINE AND DENTISTRY.

BY HENRY C. REGISTER, M.D., D.D.S., PHILADELPHIA, PA. READ BEFORE
THE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, JUNE, 1907, AND PUBLISHED BY COURTESY
OF THE JOURNAL OF THE ASSOCIATION.

It may be said that the results of the first systematic investigation of human anatomy were given to us by John Hunter, but in classifying the relationships of the different organs he described the teeth as parts of the skeleton.

Later anatomists have classified the teeth as dermal appendages,

but have failed to correlate them with the nutritional mechanism of the body as they have the other organs, consequently the teeth have received little consideration, medically speaking, in their association with general disease conditions.

Later years, however, have demonstrated that the teeth are not extraneous organs, unassociated with the physical influences of nutrition, isolated as it were, after taking their fundamental position. They are intimately correlated in their anatomic make-up and depend on the general forces of life for their physiologic maintenance in a manner analogous to that of all other bodily tissues.

Physical laws present no isolated exceptions in nature and physical phenomena are all linked by indissoluble bands with that which has gone before and that which comes after.

Related facts, in obedience to universal law, no matter where or how found or how or where applied, form a scientific harmony. To investigate the laws of Nature in order that the children of men may acquaint themselves with the seeming mysteries that surround them and to apply the knowledge thus gained, is in itself the triumph of mind over matter. To know things is the correlation of mind with matter. The knowledge of the fundamental principles or natural laws that underlie all knowledge is the essential part of culture.

Fundamentals are the stepping-stones that lie in the river of universal truth, allowing us to cross and recross to reach the tributaries and sources in the special fields of knowledge—medicine being one of them.

Is dentistry or stomatology a branch of that profession? Do medical men realize the importance of stomatologic influences in their relation to the whole bodily organism? Has not the layman been biased in his judgment of dental practice by a false conception of its relationship to general medicine? Has there not been a generally accepted belief that the teeth, directly and indirectly, neither hold pathologic relations to the human system in general nor require the same kind of knowledge in their treatment nor offer the same opportunity for pathologic research as exists in other specialties of medicine?

Histologically, dentistry has been practiced in imperfect ways from an early date. Herodotus, the Greek historian, mentions dentistry as having been practiced as a special branch of medicine in

Egypt. The first scientific knowledge we have relating to the teeth dates from the period of John Hunter, in 1771. Hunter was a great student and the most renowned anatomist of his time, but he had much to do with causing the teeth to be neglected by reason of his teaching that they were outside the cycle of vital influences.

Later investigation has shown that the physical difference between the teeth and other organs is slight. The teeth are most intimately influenced at different years of life by metabolism and by disease conditions, and they are influenced directly by reflexes from other organs and tissues subject to morbid changes.

These facts are forcing themselves on the dental profession through the insufficiency of the efforts of present-day dentistry, based as it is generally on technical manipulative effort alone. Without grasping and using the correlated facts of general medicine that are now known to be influential in causing the pathologic conditions of the teeth, the practice of the dentist must remain handicapped.

Most laymen, medical men and many members of the dental profession look on dentistry as being exclusive and conclusive within its mechanical scope. This is to be seen in the repair of carious wastes without any regard to bacterial or systemic causation, and in the construction of artificial dentures without consideration of dynamic articulation or occlusion and in the extraction of teeth without consideration of possible septic infection. The reason that brings me to this conclusion is that our profession in a large measure show a lack of appreciation and gives little or no thought as to the fundamental scientific essentials of their work. Disease of the dental apparatus may result directly from toxic or traumatic conditions or by reflexes and is often aggravated or intensified by a wrong diagnosis leading to improper treatment or neglect.

Among the numerous pathologic influences I will mention neuralgia; this disease in its idiopathic form being a functional disturbance and of frequent occurrence. It is usually confined to adult life, more frequent in women than in men. Any traumatism causing pressure to the ramifications of the fifth cranial branch, such as various morbid growths, pulp-stones or constrictions of the pulp, may result in reflexes of acute suffering of the nerve tracks terminating in the eye, the ear or the brain. Reflexes causing the most acute suffering and that have baffled the physician have come under my notice. I will relate a case:

History.—A woman, aged 55, suffered acute pain, more or less, in her eye, ear and facial region, but most constantly and acutely at the base of the cerebellum. She had been kept in a dark room under narcotics off and on for several months. Later I saw the case in consultation and finding the two superior right bicuspid's keenly responsive to normal temperature, I concluded to open into the pulp chambers. I found each pulp to be constricted about one-fourth the way up its radicular length, to the extent of not allowing a very small nerve broach to pass in, producing on the pulp a condition the same as if a string had been tied around it. Above and below this constriction the pulp and canal were of normal size. The removal of the pulp gave absolute and permanent relief.

Another case, which was one of local toxic poison:

History.—A physician, retired from practice, began to lose his health. He became seriously ill and was unable to get a proper diagnosis of his case. He was advised to take a trip to Europe. From this, however, he obtained no relief, and on his return called on me with reference to a soreness about the first superior left molar. I found the pulp devitalized and putrescent, with considerable soreness in and about the apical region and slight necrotic destruction of the alveolus. Considering the history of the case, the patient's health and the possibility of toxic influence that might arise from the affected molar, I advised extraction. This, in connection with cutting away the necrosed bone in the socket, followed by germicidal flushings, brought about a return to perfect health.

I could give a number of cases which I am sure all of you have had in your experiences, but these will suffice for illustration. In diseases of the antrum of varied septic forms, including empyema, Dr. Kyle, who is an authority on rhinologic subjects, states that 70 per cent of cases are due to dental lesions.

The treatment of the immediate diseases of the teeth, claiming all the attention given them by the profession today, is in the main finger manipulation. Can not these diseases be better controlled through medical and technical treatment combined? Is the etiology of dental caries in its local and systemic causation so obscure as to be beyond solution? What are the physical influences that go to create susceptible and immune periods in tooth decay? Does not senile decay result mostly from systemic causation? Wherein is the carious susceptibility in pregnant women? Is pyorrhea alveolaris a disease, or, as Dr. Talbot says, "a sequence of a disease"? Is it local or constitutional, or both? Will finger manipulation cure it? Do we recognize to the extent that Dr. Talbot does what interstitial gingivitis means to general health? Would not a better knowledge of the conditions help both practitioner and layman? Can we reach a solution of these problems outside of medicine?

Tooth erosions, whether they are or are not associated with constitutional influences affecting the chemical composition of the saliva and mucous excretions, are yet a mystery, although Dr. Miller seems to think that tooth brushes and gritty tooth powder are in a large measure the causation. On the other hand, the efforts and the studies of Drs. Kirk and Michaels on the saliva point to physiologic rather than mechanical influences.

The care of the teeth of children should be directed toward anticipating not only destruction of the teeth themselves by decay, but also the influences of mouth toxins derived from pathogenic bacteria that find a home in the perfectly balanced culture media of the mouth. Dr. Brown wisely says: "If the mouths of the children of our public schools could be systematically examined by competent persons and instructions given and enforced in regard to the use of brushes and antiseptic solutions, the death rate of this country would be materially lessened, and the percentage of illness reduced, and a stronger and more vigorous race would result in consequence of these prophylactic measures."

Greater knowledge of the tooth-developing stages with broader principles in controlling the feeding of children should claim the attention of the profession.

The question of medical education for dentists is undoubtedly in a condition of evolution and claiming the attention of a large number of the members of the dental profession. No one today, under the broadening influences that have gradually developed in the last decade, can look on dentistry as the same profession it was before that period. Not only has an enlarged field come under the immediate care of the dentist, but much in preventive medicine and dentistry is being accomplished.

The correction of deformities of the facial region is not alone confined to hare-lip and cleft-palate. Through the influences of orthodontia the restoration of features and the functions of the dental apparatus are accomplished perfectly. Prophylaxis in connection with the study of the saliva, investigation of the local and general causes of disease and the way their effects are expressed on the teeth, and the study of the elimination of morbid salivary excretions, all are factors which are changing for the better the conditions of dental practice and are forcing the need for a broader education of its practitioners.

The medical side of the field of stomatology permits the student to look farther into the origin of diseases and thus more intelligently to fit the remedy to these disturbances.

Finger dexterity is requisite to the dentist. This should be combined with an analytic and constructive mind to correlate data in a usable form, and besides this the mechanical ability to construct. Thus, in my mind, a student who possesses dexterity with sensitive tactile ability which will enable him to differentiate shapes and tissue composition would under ordinary instruction be able to accomplish some fair technical results. The same individual having this faculty and in addition instruction in the general principles of medicine would far outstrip the student who is without a knowledge of the fundamentals that give him a working command of the otherwise hidden secrets of cause and effect.

The layman knows practically nothing of the interlacing influences between dental practice and medical subjects. When brought under the misfortune of some associated lesion, only then does he begin to realize that the teeth can directly or indirectly produce disturbances of the most painful and dangerous character. A knowledge of these possible conditions must be realized by the medical mind. He must realize that dental diseases may receive that intelligent care so necessary in other manifestations of disease and based on scientific conclusions so far as known.

The subject of medical education for dentists, so that it could be accomplished within the prescribed course of study, would require a reorganization of the plan of instruction. This probably could well be extended in its application to other specialties in medicine, i. e., one general school for fundamentals and a special school for each specialty, or otherwise the technical branch of dentistry would have to be obtained by an increased term in the college attendance.

The medical school so arranged that the prescribed fundamentals could be given to the general members in attendance for the first two years, and special schools so arranged as to give prescribed studies directly relating to the life work of the student for two years more, appeals to me as a solution that might be sufficiently broad to include the whole teaching in medical science.

The higher education of the dentist, it appears to me, must come through the study of general medicine.

DENTAL EDUCATION AND THE PUBLIC.

BY JAMES MC MANUS, D.D.S., HARTFORD, CT. READ BEFORE THE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, JUNE, 1907, AND PUBLISHED BY COURTESY OF THE JOURNAL OF THE ASSOCIATION.

At all dental and medical meetings in the past the subject of education has had an airing; the methods of earlier days recalled and criticised and the work of specially gifted men extolled. These educational talks were no doubt sometimes tiresome and often interesting, for each speaker thought he knew what the word "education" meant. While professional, cultured and business men will differ widely in their views on the subject, the public has a belief that the man or woman that has the ability to do work easily, skilfully and satisfactorily is in his calling educated, and it is of little moment to the public whether the man or woman is highly educated or the reverse. What the public wants and seeks of the professional man and day-workman alike is the ability to do well and at a reasonable price the service required.

While it is my belief that dentistry from the days of Fauchard in Paris, to the advent of Lemaire, Gardette and Hudson in this country, was truly a profession, the dictionaries of to-day define a dentist to be one whose profession it is to clean teeth and extract teeth, repair them when diseased and to replace them when necessary by artificial ones. Surely there is nothing in that definition that calls for an academic or scientific education or warrants the public in believing that the men or women following that calling are necessarily more than artistic mechanics. In all departments of labor a degree of knowledge with manual and technical training is absolutely necessary to gain the best results and, while a liberal education is of great advantage, it is well known that valuable time, energy and money are often frittered away where a misdirected course of study is pursued, and in over-training theoretically along lines not essential for the practical work of one's calling.

In all the large towns sixty years ago could be found one or more men that had given up bench and mechanic work to become dentists. The early use of tools had educated hands and eyes and the change to office life and surroundings gave opportunities to read and study.

With little instruction these men were soon ready to extract, clean and repair teeth and insert artificial ones, and many of them were known as artistic mechanics and skilful operators. These men were known as dentists, for they attempted only what was considered dental work, referring the unusual or serious cases to the medical practitioner or surgeon.

A few of these men supported the college movement, assumed the duties of teachers and professors, and, while they did not always speak elegant English and quoted little Latin, they did teach students the principles and practice of dentistry, and later graduated men whose skilful work bore the "hall mark" and gained for American dentists honors in every civilized country. "Lest we forget," it is well to recall the early days and the men of those days and very seriously consider whether it is best to bar the sons of the poor from matriculating in a dental school for want of an academic or classical education. The name "dentist" has long been held in good repute, but for some years past the specialties advertised read strangely to the public, seeking for competent dental service.

The public may read daily in reputable as well as sensational newspapers questionably illustrated advertisements telling of the wonderful transformations that are daily effected by the skill of alveolar dentists, the orthodontists, the prosthetic dentists, crown and bridge workers, the porcelain and gold inlay workers. These are all specialties in the departments of artistic mechanical dentistry, and most of them such as make it possible for a bright young man to become an expert in less than three years in a private office under a competent instructor.

The claim—a true one—that dentistry is a specialty of the healing art has long been upheld by the old-time dental surgeon, the M.D. dentists, that date long before the degree of D.D.S. was thought of, the M.D.S., the L.D.S., the orist and stomatologist, all having more or less of a medical education and all assuming or claiming professional status. The dental surgeon, the orist and the stomatologist are titles self-conferred. The others, according to Prof. Horatio Wood, M.D., are "badges of partial culture." As the maker of that one phrase he will be remembered, for he, with the thinking public, knew that each and all of the titles given to and accepted by members of the medical profession, or more broadly stated, members of the healing art, are neither badges of

partial culture nor of broad culture. They all are simply parchment certificates given on the recommendation of the teaching faculties to students who have attended the courses of lectures prescribed by incorporated institutions of instruction.

Culture is a plant of slow growth—in bloom only after years of close study and earnest work; the world gladly honors ex-President Cleveland and Secretary Taft as men of broad culture. Institutions may confer titles, as they too often do, on men after they have accumulated vast wealth and who are apparently then forced into a lavish and not always wise distribution of it. It is the man always and not the certificate, or, if you prefer, the diploma, that attains to the honor and right to be called cultured, and dental schools, comparatively yet young in years, have graduated a fair proportion of that class of men.

Previous to the enactment of state dental laws the public had reasonable assurance that dentists, who were members of their state societies, were not only capable but reputable men. In each state now a license may be granted by a political examining board, and that license will hold good only in the state where it was procured. In many states the university graduate owning an A.M., Ph.D., M.D. and D.D.S. and the output from a dental kitchen may go before a composite political dental board and, if a license is granted him, he is given equal status on the official list and certified to by that board as qualified to practice in that state alone. It is unfortunate for the public that the competent and the incompetent, the educated and the ignorant, the clean and the unclean, are given a like standing by state examiners.

The public is more clear and reasonable in its views regarding education, and how it may be and is acquired, than many supposed professional men, who criticise in season and out of season college teaching, training and text-books. The public looks on a college course as preparatory—the education is to come with the experience that is gained after years of study and practice. There are medical graduates in large number each year; only a few get hospital appointments and the rest go out and gain a practice as fast as they can. The number that take to surgery are few, and the public does not expect that every young doctor is fully competent to treat successfully all the ills, real and imaginary, to which flesh is heir. The spirit of the medical profession and the public toward

the young doctor is kindly and they are willing to give him a chance, and time sooner or later will determine the value of his education and develop his skill.

From the dental student and graduate much more is expected and less consideration shown. He early learns from dental journals that the colleges, teachers, text-books and training are not what they should be and that they are far below the ideal standard. He is expected, nevertheless, to learn medicine, surgery and allied sciences and to become skilful as an operator and an expert in all the departments of mechanical dentistry before he is graduated, and he must then pass another examination and perform a difficult operation before an examining board to get a license to practice in any of the states of the Union. In no other educational institutions are students expected to know and do so much before they are graduates as in the dental colleges, and when a few each year fail to pass state examining boards the reading public is surprised and old practitioners wonder whether the fault is wholly with the student, the college faculty or the state examiners.

In all the colleges in the country the public believes that earnest, studious young men can surely get a good education and it is only that class of young men that should be advised to continue in a dental college. The years that have been wasted, the humiliation and sorrow that parents and friends have suffered, and the discredit to colleges all might have been averted had timely unselfish advice been given by teachers to students before the end of their first year's dental course. Educated Americans feel and express a just pride in the number and character of the dental colleges. They glory in the success of American dentists and American dentistry, and the public, educated and ignorant alike, know that what is considered at the present time a luxury in other countries, skilful dental service, with us is within the reach of the poor and at a slight cost.

The educational force for years, greater even than that of the colleges, was the dental societies. The public early realized what society work meant and kept in touch with the meetings where the old-time practitioner and the college graduate were united in their efforts for mutual improvement. The newspaper notices and reports, the papers read and discussed, the clinics given, and the distinguished teachers and operators from other states gathered on

these occasions, forced the conviction on all interested that society meetings were surely post-graduate schools of instruction. As only reputable men—and all such were welcomed—were eligible to society membership the public felt assured that all on the roll of the societies were not only reputable but competent workmen.

Over forty years ago I was asked by a gentleman, a lecturer, author and publisher, when gold was first used for filling cavities in teeth. I had to tell him, shamefacedly, I did not know. Probably since then many thousands have been asked the same question and many others relating to dentistry that they could not satisfactorily answer. It is humiliating to thoughtful men, in any calling, to have to admit to cultured people that they know little of its history. In the office of my preceptor there were a few medical and dental books, but there was little in those books relating to the early development of dentistry.

During my college course, 1864-65, there was little said in the lectures about the early history of dentistry. The professors were so earnest and anxious to give thorough practical instruction that they overlooked the great need of and the benefit that would be gained by buying and cultivating the habit of reading professional books. For many years I have hoped for the establishment, in every dental college, of a lectureship on dental history and dental ethics, and so far as I can learn there are but few out of the fifty-two or more dental colleges that have such lectureships firmly established. You have read the circulars and editorial notices in the dental journals of Dr. Guerini's "History of Dentistry," which the National Dental Association gladly accepted from him in manuscript form, ready for the printer, and which they believed the dentists of the country would be glad to see in print. The committee was assured that seven hundred subscribers would secure its publication, and for the past two years the committee of the associations has been working hard and the dental journals, most of them, have been giving up space for the circulars of the committees and editorials urging the dentists of this country and the world to subscribe to the book, and up to date they have not secured the required number. It is interesting to note that the list of subscribers, numbering now about five hundred, contains the names of the "old guard" that have sustained the journals and societies for thirty years past, and that the thirty thousand dentists, more or less, of

this country seem to care little for either historical information or dental literature. The few that seem to enjoy criticising our literature and text-books might, if they studied the situation carefully, see why neither authors nor publishers care to give up much time to revising books or care to sink more money in new publications.

During the past year public interest has been aroused by the articles published in *Collier's Weekly* and the *Ladies' Home Journal* exposing the composition and dangerous character of many of the medical remedies and nostrums on public sale. The reading public should be made to realize how false are many of the claims made by the manufacturers and, if they buy, take these nostrums with a knowledge of the danger they run. One dental society a few years ago brought to the notice of its members the advertisements of nostrums published in the dental journals. All our societies have done good work in past years trying to educate the public, but I believe that the dental examiners, as custodians of the dental welfare, owe it to their official position to give the public valuable information and advice regarding the misleading and untrue advertisements in the newspapers, telling of exclusive and original methods of doing dental work, operative and mechanical, and in exposing the character and composition of the nostrums that these advertisers offer for sale. If the dental examiners of the country, at their next annual meeting, would appoint a committee to take the subject under consideration, and the committee would prepare a paper stating facts to be given to *Collier's Weekly*, the *Ladies' Home Journal* and other newspapers, they would do a service to the public of incalculable benefit.

DISCUSSION ON PAPERS OF DRS. SCHAMBERG, REGISTER AND McMANUS.—*Dr. James Truman*, Philadelphia, expressed surprise that Dr. Schamberg separated stomatology from dentistry, because the derivation of the word shows that it means a discourse on the mouth, or the conditions in the mouth, and certainly the different branches of dentistry have to do with the mouth. He felt that it would be a serious injury to dentistry to adopt the plan outlined in that letter from Paris and bring together all the stomatologists of the world and separate them directly from all the practical men in dentistry in the world. He thought anyone who has ever practiced dentistry abroad would agree with him that the men who

claim to be stomatologists are, above all others, the worst dentists. They are recognized as stomatologists, as pathologists, as men who have been educated in medicine and who are prepared to carry on the work as they understand it; but they are not dentists. Dr. Truman asked whether the time has come when the dentist of the future must be educated in medicine before he can practice dentistry, when he must be in the same position as the ophthalmologist and the otologist? If that is to be the state of things, then, he said, dentistry will practically be a dead profession. He is not opposed to the teaching of medicine and holds that the present training in dentistry given in the higher dental schools is practically the very best training that the dentist can get. He is brought along gradually in his studies, in connection with medical teaching, not primarily, as Dr. Schamberg intimated, but he is taught the fundamental principles of medicine along with the medical students until he reaches a certain point, and then he branches off into practical dentistry. He does not become a medical man, but a dentist possessing a foundation of medical principles. Dr. Truman feared that a young man starting in medicine first is bound eventually, when he gets through and takes his degree in medicine, to take up dentistry unwillingly as a rule. He takes it up as though it was something forced on him as a means of livelihood, and he does not take it up because he feels a great interest in it. That has been Dr. Truman's experience with all young men who have studied medicine first and then graduated in dentistry afterward. If a man graduates in dentistry first and then takes up medicine, it is altogether a different proposition. Dr. Truman holds that the man who is willing and ready to acquire the knowledge of medicine that is all-essential is just as capable of doing it with the D.D.S. degree as with the M.D. degree. Dr. Truman asked what are degrees, anyway. Do they mean anything? Is the man who has an M.D. degree qualified for his profession, or the man with a D.D.S. degree qualified for his profession? It is known, he said, that they are not. It is a matter of study, of education, of continuous work throughout the life of any individual, if he wants to accomplish anything in the direction of his profession. Dr. Truman felt that although he did not have a medical degree, he is just as capable of talking on certain branches that he professes to know something about as is the man who goes through a medical college.

Dr. Alice M. Steeves, Boston, was reminded by this symposium of a similar symposium presented in this Section seven years ago. Things have changed somewhat since that time, she said, but the subject is still interesting to certain members of the profession. While Dr. Steeves agreed with Dr. Truman in many things he said, she asked how are we going to reach that stage? Dentists must, to a certain extent, have a medical education. She has found, in associating with dentists who profess to be strictly practical dentists, that many of them have a sad deficiency in medical knowledge. They are not sufficiently interested to work and study it up for themselves, and how are they to get it otherwise? If it is not a compulsory matter, a great many of them will never have it, and if they themselves have it not, then they are slow in seeing the need of it in others.

Dr. E. S. Talbot, Chicago, feared that Dr. Truman had been setting up a bundle of straw only to knock it down again. Every state has its dental society, and there are many local societies, as well as the national dental societies. Each of those societies is made up principally of men who practice the other side of dentistry, the mechanical side. The mechanics of dentistry has been hashed over and over again at every meeting for more than forty years. To such an extent is this the case that the National Dental Association is going to pieces for want of new material, scientific research work, etc., and it is already hinted that the next meeting of the National Dental Association will be given over to clinics. No association, Dr. Talbot continued, can exist by making a one-sided affair, as dentistry has done at large; and that was the reason why this Section was started—to take up the scientific side of dentistry. There is no necessity for taking up the mechanical side of this Section. Some organization must encourage research work and bring out the scientific side of dentistry. How well that has been done, he said, is a matter of history. Dr. Talbot felt that the time has come when dentists must take some definite position in their profession. Research work in the last twenty-five years has shown that every pathologic condition of the human mouth dentists are called on to treat has a systemic origin, and the time has come when dental schools must either connect themselves with medical schools in such a way that general medicine can be taught, or the dental colleges must drift into schools of medicine. Dr. Talbot claimed that more

than three-fourths of the dental schools in the country are simply schools of mechanics. The time is coming, he said, when dentists shall either remain tooth carpenters or have a medical education, so that we may be able to treat diseases of the mouth, such as erosion, abrasion, discoloration of the teeth, interstitial gingivitis, etc.

Dr. E. A. Bogue, New York City, agreed fully with what Dr. Truman said—that the stomatologists on the other side of the water are generally indifferent dentists. The efforts, however, that are being made by them this summer are worthy of notice. The schools of this country, which, Dr. Bogue thinks, are probably the best schools in the world, are yet so poor, he said, that a recent graduate of one of them told him that he had learned more in a few months' private tuition in the office in which he then was than he had learned in his whole three years in college; in other words, so far as the practical side of dentistry is concerned, he learned nothing in the schools. Yet he had received a medal and had been made demonstrator the next year after his graduation. Dr. Bogue adopted Dr. Truman's idea when he put his own son through the colleges. He insisted on his graduating as a dentist first, and after that if he chose to graduate in medicine, so much the better. He did so, and Dr. Bogue considers him very much better qualified for the practice of dentistry than if he had turned it around the other way. There is another feature about this matter of medical education and dental education, Dr. Bogue continued, and that is that throughout Europe there is a prejudice against manual labor. It is, perhaps, stronger in England than elsewhere. A man who does not have to work is a gentleman, and the man who is a graduate from a school of learning feels as though he would a great deal rather sit at a table and write a prescription, than take his coat off and labor hard to preserve a set of teeth. If what Dr. Register spoke of can be brought to pass, namely, insist on a general education in a medical school of men wishing to practice dentistry, and then let them receive a special education afterward, Dr. Bogue will be glad to see it done, but he is not ready to advocate that just yet. There must be some changes. He believes some of our present dental schools to be the best qualified institutions to prepare a young man to save teeth, but he asked, is that all that he should be called on to do? Dr. Bogue thought not. Dentists, as a rule, he said, have not been sufficiently broadly educated to draw them out of themselves. Dentists, as a

class, are not drawn from the more highly educated circles of society in this country.

Dr. Truman W. Brophy, Chicago, said that a short time ago a member of a large medical faculty made the statement that the graduates of dental schools are better prepared to assume the duties that they undertake than are the graduates in medicine, because the dental student's training along scientific lines is equally as good as is that of the medical student, and he has the practical experience in the work devolving on him as a professional man, that the students of medicine can not possibly get. Only the young physicians who have served as internes in hospitals can be compared in their usefulness to their patients with the students who have the advantage of long practical training in the infirmary of the modern dental school. Dr. Brophy expressed his interest in the subject under discussion, but feared that he could not add anything that would help the officers of the Section in carrying out their plans to make of dentistry an absolute specialty of medicine. He questioned whether such a step would be in the highest and best interests of humanity. If dentistry becomes a specialty of medicine, then the schools of medicine will have to be improved. At a meeting held at this session, it was decided that a large percentage of the medical schools of the United States are scarcely worthy of existence; that their grade is so low that it is really felt they should be discouraged from going on. To teach a student how to become a skilled specialist in medicine from a dental point of view, the dental and medical curriculum would have to be revised. One cannot learn how to treat the diseases of the human teeth in a medical school, because the medical schools, with a few exceptions, do not teach dental pathology. The dental specialist who would acquire his knowledge in a medical school would be disappointing as a student, since the curriculum of the medical school gives little attention to diseases of the teeth and to those diseases which have their origin in the teeth and which are dependent on the teeth for the initial lesion. To establish a condition of things such as prevails throughout Europe, of making dentistry a specialty of medicine, on the ground that every medical man is a dentist—such is the law in Europe—would, in Dr. Brophy's opinion, be a calamity to the dental profession and to mankind. He did not consider it necessary to call attention to the deplorable condition which prevails throughout nearly all Europe, re-

garding dentistry. Too well, the earnest advocates of dentistry in Europe know the troubles that surround them at the present time. In Paris, in 1900, there was a great International Dental Congress, which was attended by over 1,200 dentists. In the International Medical Congress held at the same time there was a Section on Stomatology, and the general attendance at any one time was from 80 to 120. Which of those meetings, he asked, contributed the most to the fundamentals of the science and art of dentistry? He held that there is a misconception in the minds of many as to what is medicine. Chemistry, he said, is not medicine; anatomy is not medicine, and physiology is not medicine. Anatomy deals with the whole subject of the structure of plants, of animals and of man. How much, he asked, does the student of medicine know about the anatomy of animals and the anatomy of plants? He has a little anatomy—the human anatomy. In physiology, it is the same way. He has the human physiology and not the physiology of vegetation, which is a part of physiology. Chemistry is a science. It has no more to do with medicine than with geology or any other of the sciences, or pharmacy, which is, in a way, a part of medicine; yet the pharmacist is not regarded as a medical specialist, nor could he receive admission in such associations as the American Medical Association, though he comes nearer being a medical man than the dentist, as he prescribes more frequently for people than do some of the physicians who send their prescriptions to him to be filled, and so he is really practicing medicine. Medicine is said to be the healing art in all its branches. This is not true, he said. It does not deal with the healing art which applies to dentistry. An examination of the curriculum of the medical schools would fail to reveal any reference to the teaching of the healing art as it applies to dentistry, with some general exceptions. Dr. Brophy said that it has been stated that the degree of D.D.S. represents a partial culture. That was said by a medical man. If there is any degree that represents partial culture it is surely the degree of M.D. It is only a partial culture, because the man who graduates in medicine in many instances has only a smattering of the things he has studied and has not become thoroughly acquainted with them. There is not any degree that represents a high state of culture. All degrees represent a partial culture. If, he continued, what the chairman in his enthusiasm so carefully outlined were to come to pass, we must not

only revise the curriculum of the schools of medicine, but also dispose of all the state dental boards, and if the boards of health take care of all candidates for admission to practice, who will say they are fit to examine the candidates as being capable of engaging in the practice of dentistry? A state board of health is no better qualified to determine whether an applicant is qualified to practice dentistry than a dental board is to decide whether an applicant is qualified to practice medicine. Dr. Brophy predicted that the time will never come when about one-fifth of all that enters into the duties of dental practice, the medical part, can be regarded as most essential. He would classify the curriculum in this way: Chemistry, anatomy and physiology are sciences in themselves. Orthodontia is a department of surgery that medical schools never teach, but which would require any man, no matter how skilful he might be, or how well qualified, or how well educated he might be, to give two years' time at least to become proficient in its practice. Operative dentistry is the greatest, including inlay work, porcelain work and bridge work. These are not medical subjects and it is not consistent with the course of training in medicine to undertake to teach anything of the operative side of dentistry. Porcelain work in all its wonderful forms and shapes and methods of development must stand out prominently as part of the work of the dentist, and it is not consistent, it is not logical, to assume that the dentist's art ever can be taught in a school of medicine. If medical schools will teach the students how to recognize diseases, so that the man who goes out to practice medicine is able to take care of his patients who have the diseases that have originated in the teeth and those which are intimately associated with them, and treat their patients properly, a great work will have been done. But, Dr. Brophy continued, to teach the art of dentistry in a medical school would be impossible. The dental student must learn the handling of the materials that are employed in dentistry; the medical schools can not teach what their curriculum does not provide. Dental pathology so far as it refers to general medicine should be taught in all medical colleges. Dr. Brophy said he hoped the Section would carry out the suggestions of the chairman, and that the schools of medicine throughout this country, when they come up to a standard that will be approved by the state boards, would teach dental pathology.

Dr. M. I. Schamberg, New York City, was pleased to have heard

this subject discussed from both standpoints, for the reason that the Section has been accustomed to viewing these subjects entirely from the standpoint of a man who has a medical degree combined with a dental degree. What does that mean? he asked. That there is something more in dentistry, or rather stomatology, than is ordinarily supposed? It is surprising, he continued, to find the opposition on the part of men associated with medical institutions and hospitals. They are willing to concede the filling of teeth to the dentist, but they do not believe he is fitted for the treatment of the various diseases of the mouth and the soft tissues of that cavity. It is very humiliating, he said, even to one who has both degrees, to find that they feel that because a man has a dental degree coupled with a medical degree, he is less fit to handle these diseases than a man who has an M.D. degree alone. Nearly all serious cases of alveolar abscess and suppurative conditions of the face and neck drift into the physician's office, when they could be treated more properly by a dentist. Why? Because patients fear the dentist is not able to cope with the condition from what might be termed a medical or surgical standpoint. Dental students, Dr. Schamberg continued, get an excellent training in oral surgery. At the present time there are very few of the better colleges that do not endeavor to teach oral surgery, the elemental subjects of bacteriology and pathology, up to the major operations for resection of the jaws, and still when a dentist asks for material in the hospitals, he not only fails to get it, but he would not be permitted to perform the operation, even if he knew how. His degree does not cover that. He is a dentist; he is not a physician. Dr. Schamberg pointed out that the dental profession must either be satisfied to cope with the filling, the extraction and the restoration of teeth, and end there, or dentists must become stomatologists in the true sense of the word and be able to cope with all the conditions of the mouth. He is convinced that a more thorough study of this subject would show that many of the conditions of the mouth are an index of the general condition of the patient. At the present time dentists are able to make a diagnosis of Bright's disease or tuberculosis, in their incipency, long before there are evidences of these diseases in the other organs. Why, then, should they not be able to prescribe for and treat such patients, if need be? The only way that that will come about is by the dentist taking the full medical course first. Some

dentists consider themselves specialists in medicine. They will not be specialists in medicine, he said, until the entire profession shall consider the taking of the medical course as essential, prior to taking up the special course in dentistry. At the present time, any medical man who practices dentistry does it, not because he is proud of the new profession he has stepped into. He does not select it because of its importance, but merely because he feels that it is a profitable field, and such men are of little value in any specialty. Dr. Schamberg asked another question in connection with the advance of dentistry to the present time: Has dentistry suffered so much because men are given a partial medical education in the elementary subjects? Has dentistry been injured because men formerly accepted dentistry as orthodontia because they were mechanically inclined? No, he said. Advance in mechanical directions has made it possible for dentistry to systematize certain work, make it easier, and, at the same time, do the work just as efficiently. The inlay of today makes it possible to insert a filling of far greater value and one which requires far less skill than the gold filling, and there will be other systems, as well as the system of orthodontia in which men have been able to go and take this course for six weeks or several months and come back very well able to cope with irregularities, and so it will be. It will be through systems of that kind, which will make possible the mechanical side of dentistry. That will take care of itself. Even though dentists should lose a little, in a mechanical direction, they can afford to do it. They can afford to do it for the sake of what will be gained through research in the true medical direction. Dr. Schamberg feels confident of that, for the reason that dentistry requires a course of study, instead of the old method of spending years in the office of a preceptor.

A TOOTH BANDAGE.

BY MC FERRAN CROW, D.D.S., VERSAILLES, KY.

Cavity preparation is always the first consideration in a filling operation.

Strong walls with retaining grooves and pits for all metal fillings, and extensive cutting and separation for inlays, are essentials generally. One or two teeth are crowned and made to do the work of from two to six, by bridging. This is absolutely against the law of nature.

The ordinary preparation of a cavity demands that it be retentive in shape, and the life of such an operation depends largely on the strength of the walls. This is also contrary to nature. The consequence is that tooth substance is lost from time to time, and operations for further preservation must be advanced, which places a greater tax upon the remainder.

It is true that a great many teeth are capable of, and do stand the strain, but on the other hand, a great many do not.

I remember a statement made some years ago in a paper, read by a prominent dentist, that the average life of a filling is five years. The consensus of opinion was that the statement was nearly correct.

With all the improvements made in the science of dentistry, so far, it is a fact that these practices, contrary to the law of nature, are still in vogue.

Instead of binding up and relieving depleted tooth tissue, we put a greater tax on it in the restorations we make.

Day is breaking, however, and the time is rapidly approaching when fixed bridges will be relegated to the scrap drawer, amalgam will be used from choice, rather than necessity, and gold foil simply kept as a gentle reminder of the backaches and shattered nerves of operator and patient in days gone by.

Cement is a rational tooth filling, for the following reasons: It adheres to cavity walls, supports frail enamel, arrests decay, and withstands the stress of mastication. It has its imperfections, such as opacity, porosity and solvency in the fluids of the mouth. A cement filling, with a gold covering or shield restoring the tooth to its normal shape, is a rational method of filling, for it combines the good qualities of the cement with the good qualities of gold, which has strength and resisting power, and is non-corrosive.

The filling I shall attempt to describe here is not really an inlay, so I have called it a "tooth bandage."

Let the reader picture to himself a large molar cavity, filled to cavity margins with cement, and a gold filling resting on and overlapping the beveled margins slightly, restoring the contour of the tooth; and a staple, loop, or miniature tack head of gold attached to the cavity side of the filling, and extending into and firmly imbedded in the cement for an anchorage. This is my tooth bandage.

The process briefly is as follows: In preparing the cavity, simply remove the decay, smooth and bevel the margins of the cavity,

rounding out angles and corners. No account is to be taken of existing undercuts, nor is it necessary to make them if they do not exist. Cut a piece of 35 g. pure gold which will cover the orifice of the cavity, allowing it to extend over sufficiently to cover every point when pressed into the angles. To the cavity side of this gold, solder the staple, loop or whatever form of anchorage is best suited to the case, using the smallest amount of solder possible and a liquid flux.

To accomplish this feat, it is almost absolutely necessary to use a mouth blowpipe and alcohol flame, as the ordinary gas burner and blowpipe produces too hot a flame. A piece of charcoal or cuttlefish makes a good block for soldering.

When the anchorage has been attached, turn the gold over and stiffen the center by soldering thereto a piece of gold plate, or an old filling flattened. Return the gold to the cavity, and holding it firmly in place with a sharp pointed instrument planted in the center, burnish the gold to the margins, trimming and reburnishing to an absolute fit.

Thus far the operation consumes but a few minutes. It may be finished, if it is a large restoration, by means of the casting machine, or it may be finished as begun, with the mouth blowpipe. In the latter case, continue adding pellets and strips of gold, striving to use as little solder as possible.

As it is not necessary to invest for soldering, the piece may be returned to the cavity at intervals, to see that the contour is correct. Finally flow enough solder (18 or 20 carat) to cover all inequalities of the pellets and strips.

After polishing, set the filling with a finely powdered cement, giving a final burnish to the edges while the cement is soft and the filling held firmly in place with a sharp pointed instrument.

This "bandage" may be applied to any tooth from the central incisor to the third molar, inclusive, it is so easy to make. It may be made for a child, or its grandmother, provided she is fortunate enough to have an old shell of a tooth left.

The ordinary process of tooth filling is reversed. The anchorage is attached to the bandage instead of a filling being mechanically lodged in the cavity. The bandage restores and supports the weakened tooth, instead of the tooth having to support a filling. A good body of cement intervenes between the metal and sensitive tooth tissue.

The tax upon the patient and upon the operator is reduced to a minimum.

The operation may be finished at one sitting, or laid aside at any stage, to be resumed later.

I could enumerate still more advantages the method has, but I feel that it is unnecessary, as they will readily appear to those who have understood my rather poor description and who grasp the idea.

HEADACHE AS A SYMPTOM OF LOCAL DISORDERS.

BY FREDERICK COGGESHALL, M.D., AND WILLIAM E. MAC COY, M.D.,
BOSTON, MASS. READ BEFORE THE AMERICAN MEDICAL ASSOCI-
ATION, JUNE, 1907, AND PUBLISHED BY COURTESY OF THE
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"Nothing could be less scientific than the establishment of a hierarchy among medical problems based on the relative severity of symptoms. Prognosis apart, there can be no division of diseases into major and minor. It is the outcome of ignorance to relegate any symptom to a secondary place, for we forget that difficult questions are often elucidated by apparently trivial data." The sentences we have just quoted are from the introductory paragraphs of Professor Brissaud's preface to Meige's and Feindel's interesting work of "Tics and Their Treatment." (English translation.) They express what we have often thought in regard to the commonplace subject of headaches.

We propose in this paper to consider only headaches in which the pain in the head is the sole, or at least principal, complaint of the patient. It is based on the analysis of over 1,700 cases collected during the past fifteen years which have been personally seen and studied by at least one of us.

In studying cases of chronic or recurrent headaches it is always our first endeavor to obtain the most precise description possible of the location of the pain, its character, time of occurrence, duration, spots of tenderness in head, and the immediate cause of the individual attacks, where any have been observed. We have then proceeded to make the most complete examination of the patient's

[This article, with the discussion, is printed in the DENTAL DIGEST because it bears a close relation to *trigeminal neuralgia*—a subject upon which dentists need all light and information available.—Ed. DENTAL DIGEST.]

physical condition and past and present history that time and opportunity permitted. The most important points in such an examination are:

1. The family and personal history as to evidence of neurotic tendencies, worries arising from business and family troubles, or a nerve-tiring occupation.

2. The habits as to care of the bowels, diet, the state of the digestion, the menstrual function, the use of tea, coffee, tobacco and alcohol, bad air, the practice of sexual excess or masturbation.

3. A physical examination as to the reflexes, as far as they indicate an irritable weakness of the nervous system, the heart, the state of the blood vessels and pelvic organs, the character of the urine and the blood, the eyes, nose, teeth and ears.

The principal conclusions at which we have arrived from this study are: (1) That a neuropathic diathesis is an essential condition of the occurrence of almost all chronic headaches of the kind we are discussing; the only exceptions to this rule occurring in patients where the other causes we are about to consider exist in unusual severity. (2) That the great majority of cases have, in addition to a neuropathic diathesis, some source of local irritation to the nervous system which often manifests itself in no other subjective symptom. (3) That a minority of cases, though still a considerable number, are suffering from anemia, or a toxemic condition, which, as before, occurs in a person of neuropathic diathesis, and may manifest itself in no other subjective symptom of importance. (4) That the more marked the neuropathic tendencies, the less need be the degree of local irritation, or toxemia, and vice versa. (5) That in some cases, often the most severe ones, a local irritation of the nervous system is reinforced by a toxemia. And (6) that there are a considerable number of what we may call composite headaches in which two or more local irritations combine to intensify the sufferer's neuropathic tendencies and to cause headache.

LOCATION.

We have found the location of the headache the most useful single symptom in pointing out its cause. The classification of locations which we have adopted is: 1, frontal; 2, temporal; 3, occipital; 4, vertical; 5, parietal; 6, circular, in which the pain is described as resembling a band surrounding the head; and lastly, 7, general head-

aches. It is also very common to find combinations of one or more of the first five locations which we have enumerated. For example, vertical-occipital headache, due to retroversion of the uterus, with endometritis. These when complicated are often mistaken for true general headaches. Moreover, any headache when very severe tends to become widely diffused. Its true type in such a case is often indicated by the region of most marked tenderness to pressure, or still more clearly by the location in which the pain began.

None of the indications to be drawn from the location of the pain are absolutely invariable, as will be seen by a study of the tabulated cases. All that we would insist on in regard to the location is that it is the most important guide in the patient's description of the probable cause. There are few cases, however, of any severity in which the whole of the examination which we have mentioned should not be made. Much of the doubt and uncertainty as to the causation will be found to be due to the incompleteness of the general examination of the patient. The more one persists in looking for causes in the eye, nose and pelvic organs the more frequently will he observe cases in which the typical headache of derangements of these organs will be found the only subjective symptom of disease. On the other hand, if our interest in the local irritations blinds us to the important fact that they rarely cause headaches, except in the neuropathic individuals, or renders us forgetful of the possibilities of toxemia or anemia, our results will not be perfectly satisfactory.

Some indications, apparently pointing to one system of organs as the source of headache, may be very misleading, e. g., the headache occurring only at the time of menstruation is by no means necessarily due to any derangement of the pelvic organs. We should never forget, in studying any symptom that comes on at the menstrual period, that the most normal woman is more inclined to be nervous at that time, and that the resisting powers of the nervous system to all kinds of strains is lowered. We have seen purely eye-strain headaches which occurred only at that time.

The local irritations which cause headaches are approximately in the order of their frequency:

1. Irritation of the eyes, which may be due to astigmatism, muscular imbalance, hypermetropia, or its opposite, reinforced in cases of long standing by the irritability of the retina which they

have produced. Of course, more than one of these conditions may be present in the same eye.

In these cases the pain is either (a) frontal, usually due to astigmatism; (b) occipital, often from muscular imbalance; (c) temporal, from muscular imbalance or hypermetropia; (d) or deep-seated in the eyes themselves from irritability of the retina. They are usually bilateral in simple astigmatism, but may be, especially the temporal headaches of muscular imbalance, unilateral. The pain may alternate from one side of the head to the other in successive attacks or during the same attack. They are often accompanied by nausea or vomiting, and, of course, depend much on the occupation and age of the patient. They are more apt to occur at times when the patient's nervous strength has been subjected to some special tax, such as menstruation, pregnancy, a long illness, loss of sleep, or merely an especially tiring day's work.

2. The nose and accessory sinuses: Adenoids, polypi, hypertrophied turbinates, spurs, infection of the frontal sinuses, or the antrum and, sometimes, deflected septa.

In these cases the pain is usually frontal, more often than in eye-strain confined to one side of the forehead, and frequently, unlike the pains of eye-strain, the pain is limited to a small, well-defined spot, sometimes in the median line directly over the root of the nose, or on either side of this line in the lower part of the forehead, or higher up just inside the line of the hair. These are particularly apt to be morning headaches, especially in mouth-breathers, and to wear off with the more normal respiration of the waking hours, or with the better draining of the infected cavities when the patient is in an erect position. The pain is often of a duller and more deep-seated character than that of eye-strain. It may be complicated by a headache due to esophoria where the esophoria is a reflex due to the nasal disease.

3. The pelvic organs in women: Retrodisplacement of the uterus, posterior parametritis, endometritis, polypi, subinvolution, sclerocystic ovaries, prolapsed ovaries, and perhaps ovarian irritation from adhesions. The pain is almost invariably vertical in cases due to diseases of the body or lining of the uterus, as in endometritis, subinvolution or polypi, and with equal certainty occipital when due to retrodisplacement of the uterus, posterior parametritis or ovarian disease. The pain in the latter situation is much less likely than

the occipital headache of eye-strain to extend down into the neck and upper part of the back. These headaches are practically always bilateral. They are often worse about or during the menstrual period, but are not very infrequently characterized by cessation during the menstrual flow. The occipital headaches of uterine or ovarian displacement are often aggravated by walking or standing. They may be complicated by temporal or occipital headache due to exophoria, which is in its turn a reflex from the pelvic displacement.

4. The stomach: Hyperacidity, deficiencies of the normal acid, the presence of food entirely undigested from any cause. These headaches are practically always frontal and bilateral, and are more commonly situated in the upper part of the forehead than those due to the eyes or nasopharynx. When such a headache is due to the presence of undigested food remaining in the stomach it is readily relieved by vomiting. The occurrence of the pain soon after eating, or about the time that the latter stages of gastric digestion have been reached, is characteristic. It often occurs too soon after the ingestion of irritating food to be fairly attributable to the absorption of poisons into the blood.

5. The teeth: The irritation of decayed teeth, almost always in the upper jaw, and especially of the third molar and cuspid tooth. They are usually temporal when the molars are the principal cause, or frontal especially in the case of the cuspids. As might be expected from their origin, they are frequently unilateral. We have seen a few cases where all the teeth of the upper jaw were in bad condition, where the pain was very diffuse and persistent, covering the whole of the forehead, temples and vertex. Occasionally, especially in disease of the third molars, the pain is confined to a small spot on one or both sides of the occiput.

6. A few cases due to the ears. These are almost the only parietal headaches due to local irritations and are unilateral or bilateral as one or both ears are involved. They may be due to the mere presence of wax adherent to the drum or to stoppage of the Eustachian tubes. They are rarely due to disease of the middle ear when unaccompanied by obvious local symptoms.

The characteristic headache in anemia is vertical, and is frequently accompanied by other morbid sensations, which the patient often describes as fulness and pressure in the top of the head, or as a

feeling as if the top of the head would come off. The toxemic headaches are most commonly described as involving the whole of the upper part of the head, or as a band of pain encircling it accompanied by the sensation of pressure or constriction. The pressure of a too tightly fitting shirt band or collar around the neck may also give rise to very severe and persistent general headache closely resembling that of toxemia due to constipation, bad air, tobacco or coffee. The time of occurrence of toxemic headaches has frequently some relation to the absorption of the poison, e. g., the evening headache in a man who has been smoking too much all day, or the morning headache of the one who has spent the night in a badly ventilated room. In our experience the headaches due to the presence of some of the purin bodies in excess of the blood are more apt to be paroxysmal in the attacks than in the case of other toxemias, and rarely occur except in close connection with the presence of an extreme reflex irritation in the eyes. Another type of toxic headache is that where the area of pain exactly corresponds to the distribution of some nerve in the head, occasionally the occipital, but much oftener the supraorbital branch of the fifth. When very severe the pain in the latter case may involve the ball of one eye and the root of the nose on the same side, and the pain may be so definitely ocular in location as to make the patient himself sure that it is due to the eye. When noticeably periodical, occurring every day or every other day at about the same hour, we have occasionally been able to prove by examination of the blood that these attacks were malarial, and one can almost always obtain a history of malaria in the past. They yield readily to quinin if used in the same way that it would be for chills and fever. The headache of arteriosclerosis is very commonly occipital and may be general. The age at which it makes its appearance is often suggestive of its origin, which may be confirmed in most cases that are not very advanced by the therapeutic test of relief by the use of nitroglycerin.

MIGRAINE.

We have reserved the subject of migraine for special discussion, because our views, though by no means novel, are generally regarded as heterodox by students of nervous diseases. As a result of conscientious study of the whole subject of headaches during the

past fifteen years we have been forced to abandon the common conception of the disease with which we started out.

We have come to regard the classical type of migraine as a headache due to the presence of a local irritation, almost invariably eye-strain, in an individual of markedly neuropathic diathesis in which the immediate occurrence of the attacks may be due to the special irritability of the nervous system, caused by transient but frequently recurring conditions of toxemia, which in a less neurotic individual or one who was not constantly subjected to the nervous wear and tear of the eye-strain, would be incapable of producing any such effects. The numerous peculiar cases with more psychical symptoms than the merely hysterical tendencies of a neurotic patient could account for, or those complicated by more or less transient paralysis of various ocular muscles, differ in so many respects from the typical cases and also among themselves that we fail to see how they can all be classed under one disease.

To regard all the severe recurrent headaches as a single affection, without regard to their causation, seems to us as unscientific as it would be to treat all cases of chorea or choreiform movements, from Huntington's chorea to habit tic, as one disease. That which follows is intended to apply only to what may be described as a common typical migraine.

Migraine may be described as a severe form of headache occurring at more or less regular intervals, often though not invariably, unilateral, especially severe in the front of the head, forehead and temporal region, but extending when at its height over the whole head or one-half of it, alternating at times from one side of the head to the other in successive attacks, or even during one attack, lasting from twelve to twenty-four hours, though it may last longer, for several days, or a shorter time, only three or four hours, usually accompanied by more or less disturbance of digestion, and often ending with vomiting. The attacks sometimes terminate by the patient falling asleep to awake the next day entirely relieved. Where it does not reach a crisis by vomiting or sleep it is frequently noticed that the pain seems to wear off about sunset. Victims of these headaches are invariably of a neuropathic constitution and the disease is markedly hereditary. It comes on most commonly in childhood or at puberty and invariably, as far as our knowledge goes, fades out when the patient reaches the age of about fifty. The attacks

are often preceded by prodromata, usually ocular, often accompanied by paresthesias of the neck, arm and even trunk, especially on the same side as the headache in the true hemicranial cases. They are often connected with epilepsy in a way that has suggested the possibility of a similarity of nature in the two diseases.

The etiologies suggested for this disease are sufficient evidence by their variety, and in many cases their unpracticable character, of the difficulty that the neurologists have generally experienced in explaining it. Many of the best authorities on nervous diseases lay stress on reflex irritation as the cause. The two factors which have been most emphasized have been heredity and some form of auto-intoxication. It is perfectly true that there is a marked hereditary element in migraine, but these cases are simply among the most violent and regularly recurrent of the headaches which we have already analyzed, and we have stated in the beginning that a more or less neuropathic tendency is characteristic of almost every individual who suffers from recurrent headache. A neuropathic diathesis is, of course, strikingly hereditary. It should also be remembered, as pointed out by Risley in 1899, that there are few points about the structure of the body that are more certainly inherited than the shape of the head, and that the shape of the socket of the eye ought to partake together with the rest of the head of this transmissible character, and finally that the shape of the socket may have a great deal to do with peculiarities in the shape of the eye. All that has been said, therefore, of the manner in which the disease can be traced in one generation after another in the same family, or in all of the children of one of its victims, is perfectly true. But it is far from proving that such headaches really constitute a disease *sui generis*. The usual ages of onset and disappearance of the disease is very suggestive of a different explanation. The disease rarely makes its appearance until the child is of school age, very frequently only with the increased strain on the nervous balance of puberty. And, what is very curious, if the disease is principally due to faulty metabolism, is that it invariably disappears at about the age when the victim's vital functions are beginning and his liability to auto-intoxication from a weaker digestion, from less vigorous action of the organs of excretion, from an impaired circulation, markedly increasing. It seems to us that a candid consideration of this one point of admittedly invariable disappearance of the disease at or

about the coming on of old age is sufficient to render untenable any explanation which bases itself principally on the theory of autointoxication, whereas the age of disappearance can only be explained by assuming that it is dependent for one of its essential factors on some condition which is known to cease to exist at about that time of life. It is very hard to name anything which fulfills this requirement except the power of accommodation in the eye. Migraine disappears just when the patient ceases to be able, by any effort on the part of the muscles of his eye, to correct or accommodate for the errors in its structure. We have still to see a case of migraine that exists in an individual with no muscular imbalance and no more than the physiologic amount of astigmatism, and we have seen case after case of typical migraine completely cured, though often with much difficulty, by a sufficiently careful correction of ocular errors. We should not be understood, however, in saying this, to go quite the length of some ophthalmologists who regard migraine as due simply and entirely to eye-strain. In practically every form of headache we have, to use a mathematical metaphor, to regard the disease as a product of several factors, a lack of resisting power in the nervous system, which is about what a neuropathic temperament amounts to, and secondly, some toxemia or some reflex strain due to local disease. Migraine may be regarded as a headache in which the neuropathic factor is larger than in some others, in which the factor due to local irritation is, however, an essential one, and in which, to continue the same metaphor, the product of suffering is increased, at least in most cases, by multiplying these by a third factor, that of autointoxication. We can not cure all cases of migraine immediately by fitting them with glasses, but the best possible correction of the irritation from the eyes will, in our experience, lead to the ultimate disappearance of the symptoms. It is true here, as in mathematics, that if you can reduce one factor to zero your product will be zero. It seems to us that this is a less radical view than has been taken by many ophthalmologists. It does not ignore the neuropathic and possibly toxemic factors, but it also refuses to ignore the immense importance of the eye and proposes to treat the disease by eliminating the most easily treated essential element in its causation. It is, of course, true that everything in the way of improving the patient's general health by wise diet, plenty of outdoor exercise, and the greatest possible care to main-

tain the functions of excretion through skin, bowels, kidneys and lungs, at their best, and tonics to improve the general health, will all lessen the neuropathic and toxemic factors and may in this way be of great benefit. They should never be neglected, but the very cautious way in which the eminent authorities who have advocated them as the only means of treating migraine speak of the possibility of a complete cure by such methods, is in itself a pretty good proof of their inadequacy where employed alone.

EXAMINATION OF THE EYES.

We have spoken of a "careful examination" of the eyes and it may perhaps be worth while to explain what we understand by a careful examination. The proper examination of the eyes for the correction of reflex symptoms either in the form of headaches, indigestion or "general nervousness" must be made very differently from the examinations of some otherwise excellent ophthalmologists. In the first place a mydriatic must be used. In children atropin is much better than homatropin, and at least homatropin should be used up to the age of 55. Moreover, the mydriatic must be used thoroughly. Its effects are obtained with incompleteness in too many cases. It is much safer for the ophthalmologist to put the drops in the eyes himself at his office. This requires much more time for the patient to wait around the doctor's office and somewhat more time from the doctor, but it is a point of essential importance in the more difficult cases. The most exact determination of the axis, as well as the degree of astigmatism in each eye, is essential. We always distrust a prescription, of which one sees too many, in which the axis comes out in a nice round number of degrees and the same for both eyes. It can not be too much insisted on that small degrees of astigmatism are just as likely to lead to reflex symptoms, though much less likely to lead to defective sight, as the extreme ones. The findings on the reading tests with different lenses must in every case be carefully verified by the shadow test. The patients should be told plainly that there is no use in wasting any money on glasses if they are not prepared to wear spectacles, moreover, if they are not prepared to wear them from morning till night. The patients should invariably be instructed to bring back the glasses to the ophthalmologist before the marks which the opticians use for centering the lenses are washed off, that

the doctor may himself see that they are centered correctly. The patients should be told to return frequently to the optician and have the glasses readjusted, in case their frames or bows become bent. They should be particularly instructed how to take off and put on the glasses, holding them by the bows on both sides to prevent distorting the frames. Women especially should be cautioned to see that they do not catch a loop of their hair under one bow of the glass, thereby entirely altering the relation of the axes of the cylindrical lenses to their eyes. For persons engaged in an occupation requiring much close use of the eyes ophthalmologists should be more careful than they usually are to see that the lenses are set at a proper angle to the eye; that is, so that when the patient is looking down at her sewing or writing she will not be looking through the very lower edge of the lenses and that at a decided angle to its surface. The toric lens overcomes this difficulty to a great extent. If there is any evidence of retinal irritation at the time of examination, the first pair of glasses at least should be amber tinted. The same minute attention should be paid to details in the examination and treatment of the nasopharynx and pelvic organs.

We venture to say that most neurologists who are skeptical about the importance of the eye as a factor in migraine and many other less severe forms of headache have failed to give this much consideration to the details of the oculist's treatment, but if we do not pay unremitting and exact attention to all these minutiae we shall continue to see cases of migraine that are not due to the eyes.

We would not be understood as confining all treatment of headaches to the removal of local irritations or the elimination of poisons, although we believe this to be the most fundamental part of the treatment. Any tonic treatment directed to the general health, especially to the removal of the anemia, the improvement of digestion and the functions of excretion and, above all, everything tending to the improvement of the nervous tone and mental condition, should prove of the greatest value, but such treatment ought by no means to be confined simply to drugs. General massage is of special value in the toxemic cases, and local massage to the head and neck is often of great use in relieving the individual attacks. Medical gymnastics and all kinds of rational outdoor exercises should be strongly recommended. To the ordinary kind of exer-

cise in a gymnasium we would attach much less value. The gymnastics should not be attempted unless they are carried out under the care of an experienced masseur and medical gymnast, who at the same time realizes the limitations of his functions and takes his orders directly from a physician. Cold bathing in the form simply of friction by the means of rough bath mittens wet in cold water (ice water if the patient will stand it), followed by a vigorous rub-down, the drip sheet, the tonic bath, are all of use in properly selected cases. We have found the employment of vibration, vigorously and thoroughly over the thoracic region of the spine and the hepatic and splenic areas, of decided benefit in some cases of toxemic headaches. General faradization with mild currents, and prolonged wave current treatments with the static machine, are of great value, especially in the toxemic cases, and the latter wherever the patient is very neurotic. The positive breeze from the static machine applied to the head gives great relief to the attacks in many cases. The most universally good effects of this treatment, and also of local massage designed to reduce congestion, are confirmatory of our impression that in practically all headaches, except those which are a distinct neuritis, whatever the primary cause, the immediate cause of pain is congestion. This we believe to be true even in anemic headaches. Of tonics, strychnin in some form is enough in many cases to stop the recurrence, at least for a time, of some forms of eye-strain headache. Iron is, of course, indicated in the anemic cases and, we believe, in many others. The proneness of those subject to headaches to develop them from taking iron is well known. In cases where Blaud's mass, the chlorid, citrate or dry iron sulphate cause any increase in the symptoms we usually administer the lactate, which we have found much freer from unpleasant effects in headache patients. We have met with little satisfaction in the use of the many and much-vaunted forms of so-called organic iron. Arsenic in the form of sodium arsenate is less irritating to the stomach than Fowler's solution, or if combined with mercury in the form of Donovan's solution is of the greatest value in many obstinate cases, especially of the more severe types. In headaches involving the distribution of the supra-orbital, or of any other definite nerve in the scalp, we have found great benefit and often permanent cure from the systematic use, up to the point of toleration of each drug, of two grains of quinin

sulphate and $1/400$ of a grain of aconitin nitrate given every two hours in separate tablets, so that either can be discontinued on the appearance of the appropriate indications.

In some cases of migraine, especially where exophoria was present and the pain principally in the temple or occiput, we have found marked benefit from the use of cannabis indica in from $1/8$ to $1/4$ grain doses of Hering's extract three times a day continued for a long period. In the matter of drug treatment the same attention to details is of importance as in the fitting of glasses. The physician who prescribes such drugs as aconitin, cannabis indica or ergot without the most careful supervision of their quality will constantly be disappointed in the results.

The importance of the toxic element in the immediate bringing on of an attack of migraine is well illustrated by the best methods of aborting the beginning of the attack. Thorough lavage of the stomach, followed by the administration of sodium salicylate or aspirin combined with a good dose of caffein, or, still better, given in strong black coffee, has proved of more service in our hands than any other treatment when the attack first begins. Another resource when the pain is principally frontal is spraying the nose with a very strong, say 20 per cent, solution of cocain hydrochlorid. The character of the drug should be unknown to the patient. When called to a case in the midst of a violent attack of any kind of headache, which is well under way, we do not hesitate, if we are fairly well satisfied that it is due to an ultimately removable cause, to administer a hypodermic injection of morphin with atropin and to repeat it if necessary until the patient is comfortable. In a severe headache, which has already lasted for a couple of hours, we are convinced that even where there are no particular gastric symptoms the stomach is in such a condition with the majority of patients that any drug put into it is simply wasted as far as relief is concerned, and many of the unpleasant results of using the coal tar products have been due to the administration of repeated doses under these circumstances, where no relief was obtained until the headache began to go off of itself, and then all the successive doses were apparently absorbed about the same time. Where one does decide to make use of the coal tar analgesics, antipyrin has seemed to us much the safest and as efficient as any other. We always guard it with caffein, and the same effect will be obtained from a much smaller dose if the drug is administered in an effervescent form.

The hard compressed tablets, so commonly in use, dissolve with greater difficulty than many realize, and a powder is much preferable where an effervescing salt cannot be used.

DISCUSSION.—*Dr. Wm. Healy*, Chicago, has seen cases in which, although no correction of vision was needed, reduction of the amount of eye-work brought about cessation of the pain. On the other hand, in cases in which refraction was done by a good man and even corroborated by another, there were frequent recurrences of the headache until there was a decided reduction of the work done by the corrected eye. Eye-strain which causes headache may, he said, be either use of eyes which refract imperfectly or it may mean merely overuse.

Dr. Hugh T. Patrick, Chicago, speaking of the relation of migraine to eye-strain and the relation of eye-strain to migraine, said that the author's results in the treatment of migraine by the adjustment of glasses have been very much more fortunate than have his. Every case of migraine that comes to Dr. Patrick is at once sent to a competent oculist, provided an eye examination has not already been made. Ordinarily the eyes have been attended to before he sees the patient. But the cases in which the migraine has been cured by the adjustment of glasses are of the extremest rarity in his experience. This is, of course, assuming that the headache is really migraine. The single element of heredity, Dr. Patrick thought, would throw some light on his poor results, because in the cases he sees the element of heredity, not only indirect but direct heredity, is of surprising frequency. The fact that the patient has what she calls sick headache, and her mother had what she called nervous headache, and her grandmother had what she called neuralgia, does not alter the fact that all three had migraine, and, if that fact is taken into consideration, there will generally be found somewhere in the family a history of migraine. Dr. Patrick inclined to the belief that some of the men who get such very brilliant results from the adjustment of glasses in migraine are not dealing with typical cases. Heredity also plays an important part in the production of the refraction errors, and that parents with errors of refraction are very apt to have children with errors of refraction, but, nevertheless, Dr. Patrick does not believe that cases of migraine are cured by the adjustment of glasses, at least not in the proportion mentioned by the author.

Digests.

EMPIRICISM IN DENTISTRY. By John O. McCall, D.D.S., Binghamton, N. Y. In the consideration of a topic so general in its nature as the subject of this paper, it is well, perhaps, to begin by stating briefly the meaning and scope of the subject as exactly as may be possible in a few words. Webster defines empiricism, first, as "Dependence of a person on his own experience and observation, disregarding theory, reasoning and science," a second meaning being "quackery"—in the medical sense.

It goes without saying that there is quackery in dentistry as there is in medicine. The object of this paper, however, is not to deal with quackery, but to call to the attention of individual ethical practitioners that empiricism which, in spite of the wide dissemination of modern scientific knowledge, is far too common among them—namely, the dependence of a person on his own experience and observation (or that of another), disregarding theory, reasoning and science.

It is a matter for deep regret that the need for such a paper should exist at a time when the achievements of Pasteur and those who followed him are a part of everyday knowledge, and the names of Miller, our own preeminent scientist, of Black, Truman, Kirk and others, are set upon the honor roll of our profession. The need is shown, however, by articles in the journals, too many of which show a disregard of theory, reasoning and science in the fullest sense of the words; and also, most unfortunately, by sins of omission and commission in the mouths of patients. Your essayist would not be understood as invidiously criticizing the members of his profession, whose collective efforts have given to dentistry the position it now holds. But having had the advantage of some scientific training before entering upon dental studies, he feels qualified to point out a too great trend in the profession toward empiricism, and also to indicate some means by which those who may see in this paper some application to themselves can attain to a more truly scientific way of thinking and working.

The keynote of the situation lies in the phrase "a scientific way of thinking and working"—in the words of Dr. Kirk, a knowledge of the *how* and the *why*. In the *Cosmos* for August and DENTAL

DIGEST for September, 1907, was printed a paper by Dr. James Truman, entitled, "Wanted!—A Pathological Sense," in which he describes most graphically some of the errors of empirical practice. It was most gratifying to the writer to find his views advocated by such an authority. But while it is true that these sins are committed through the lack of a pathologic sense, the root of the trouble lies deeper. It is the lack of a scientific way of thinking. We know that dental caries is caused, roughly speaking, by bacteria; that invasion of the dental pulp and invasion of the pericementum by these bacteria will result in death of the one and abscess of the other. And we know that phenol, mercury bichlorid and similar agents destroy bacteria. Of these and other scientific facts we are sure. Are we not, then, clothed in a scientific habit of mind? Unfortunately, no. We have a collection of statistics, not scientific knowledge. And the reason for this is that we have failed to grasp the fundamentals of physiology, pathology, anatomy, histology and allied sciences, and, moreover, have failed to make a knowledge of these sciences a part of our daily working mental equipment.

Undoubtedly the prime cause of this state of affairs lies, with the individual dentist, in a failure to appreciate the true situation. But among the contributing causes is the dental school. The writer has no wish to criticize this much-abused institution, but the fact remains—and for the present must remain—that in spite of excellent faculties, curricula and facilities, the schools are hampered by two things—the average mentality of students attending, compelling adherence to certain levels of instruction, and the necessity of preparing their classes to pass a series of examinations culminating in state-board examinations. On account of these two things it comes about that dental education in what we are pleased to call the theoretical branches consists, practically, in memorizing answers to lists of questions. This is the beginning of a tendency to reduce everything to cut-and-dried formulæ, making memory do the work, when, as a matter of fact, common-sense reasoning from a few basic facts of physiology and pathology will solve many complex and involved problems with which memory is unable to deal. The examination system of our schools and colleges has much for which to answer. This instrument of

torture looms up large before the student entering a dental college from the high school, shutting off a view of the broad realm of true scientific knowledge which lies beyond.

But let us put the matter in concrete form. Let us take, for example, the case of a patient presenting with a devitalized tooth—an incident of everyday practice. The dentist knows that the trouble was caused by bacterial infection, and that treatment with a germicide is thereby indicated. So far, so good. However, at this point scientific reasoning stops. He has been told by someone, or has read in a journal, that a certain remedy is the best thing for root-canal treatment, and applies it. Is the case a simple one of septic canals, or is it complicated by so-called blind abscess, abscess with sinus, or other sequelæ of pericemental infection? "What matter?—this remedy has been used by others for years in treating root-canals," he says. The worst of it is that the remedy may be a very excellent one, meeting successfully many of the conditions found in this line of work. Hence he goes on using it blindly; and as to the failures, he says that they were inevitable. He knows it is good, but he does not know why it is good, and when it fails he does not know why it fails, or what remedies will succeed in those cases, and why. In other words, his practice has been empirical. It is not to be understood that reliance on certain formulæ—in root-canal work, for instance—is to be wholly condemned. But the operator should know why he relies on a certain combination of drugs. He should know what it will do and what it will not do, and how he should treat the cases it will not correct, and why.

Mechanical dentistry, as such, is a thing of the past. It is impossible to properly make even an artificial denture without a knowledge of occlusion and the anatomy of the maxillæ and temporomaxillary articulation. The simplest kind of mechanical as well as the most complex operative procedure must be approached from a scientific standpoint—taking into consideration the normal condition of the parts, their relation to the general system, the restoration as nearly as may be to the normal, and, most of all, the possible pathologic sequelæ of the procedures planned. In this connection we have not only to consider the more or less obvious physiologic and pathologic factors involved, but also that mysteri-

ous quality known as the "personal equation"—that nervous variant which causes irritation of the pulp under a filling in one mouth, while a filling in another mouth, precisely similar in every respect, will be perfectly comfortable. All these things, as well as the purely mechanical aspects, must be kept in mind in performing operations in a truly scientific way. Exceptions must be made in favor of new work, which, being largely a product of the imagination, has not always an obvious foundation in scientific fact. Imagination points the way for scientific advance, as instanced in Newton's discovery of the law of gravitation, Darwin's theory of evolution, and other scientific discoveries. To be of value, however, imagination must be curbed by laws already proved. New work must be tested as far as possible by accepted scientific theory, and must always be scientifically observed and recorded, to give a groundwork on which correct theories may be built.

Reference might be made at this point to inlay work, which is receiving so much attention at the present time. Inlays, both porcelain and gold, are of undoubted value, as proved by their tooth-preserving qualities and other desirable features. But we have yet to attain to a completely satisfactory scientific explanation as to why they are so good. We are depending on our observation and experience, and until we are able to give the *why*, in accord with theory, reason and science, our inlay practice will be, strictly speaking, empirical. However, it is not given to each one of us to be a Miller, spending thousands of hours to prove, for instance, that tooth-wasting can be produced by the tooth-brush, and we can trust the discovery of the inlay theory and other new ideas to those who, by training and by facilities at hand, are especially fitted to work out these problems. But it is in regard to everyday procedures, the theories of which have been thoroughly worked out, that the empirical practice of many dentists is not so readily to be excused.

Criticism alone, and of an entirely general character, not only can be of but little assistance, but may, in spite of the greatest good-will on the part of the essayist, provoke some ill feeling among those to whom it is addressed, thereby defeating its main object. Therefore, notwithstanding the danger of exhausting your patience, it is the purpose of the writer to indicate, as briefly as

possible, a few lines of practice which should be conducted in a more scientific manner, and to make a few suggestions which may contribute toward the attainment of that end.

Metallic fillings. We have here one of the most fruitful sources of irritation of the pulp by thermal changes, as well as through the incompatibility of metal and tooth tissue. Cavities of more than moderate depth should be lined with cement, and if extending to the vicinity of the pulp should be protected by the application of varnish or zinc oxysulphate before the introduction of zinc oxyphosphate, which is quite irritating in itself. The writer considers it good practice in filling cavities in which the pulp is exposed, or nearly so, and in which capping procedures may be considered feasible, to insert a temporary filling for a week or more where the time is available. This temporary filling consists of a dressing of oil of cloves, over which is inverted a concave disk of thin copper to prevent pressure on the pulp and also the squeezing out of the oil by the guttapercha with which the dressing is sealed in. The object of this procedure is to allow the pulp to attain, in the presence of a bland, soothing dressing, to a state of rest from the previous thermal and chemical irritations, since a filling in any degree less bland will in just such degree hinder the pulp from reaching such a state of rest, and that at a time when it needs all the help we can give it.

The gingival margins of too many gold and amalgam fillings are finished in a careless manner, or not at all, leaving edges of metal to irritate the gingivæ.

Root-canal treatment. Reference has already been made to this. Your essayist may seem somewhat hypercritical in regard to work in which so many dentists are successful. But when articles, more or less at variance, appear in the journals advocating the use of certain remedies said to be well-nigh universal in their application, and when patients present with chronic abscesses, previously pronounced incurable, but yielding quite readily to rational treatment, it would seem that general practice in this branch is still, strictly speaking, empirical. The writer wishes he did not feel called upon to speak on the hermetic sealing of root-canal dressings, but items in the journals advising the adoption of this procedure, together with the tales of patients, show that there are still some who seal

such dressings in with cotton only. It should need only the mention of the immediate invasion of saliva, not to say food products, diluting the antiseptics and bringing fresh recruits to the army of bacteria already encamped within the canals, to correct this uncleanly, unscientific habit.

Under this heading it may be well to speak also of immediate root-canal filling. Many dentists advocate and practice immediate root-canal filling after extirpation of the pulp by cocain, claiming that as the parts are sterile, if the operation be properly performed there can be no bad after-effects. This is good scientific reasoning, but it does not go far enough. In the first place, if the operation has been entirely painless, it is an indication that at least a slight amount of cocain—by its very presence an irritant if not a poison—has penetrated beyond the point at which the tissues were torn apart. In the second place, we have created a wound, tiny though it may be. This means that a certain amount of healing must take place. It is a well-known fact that healing surfaces exude a certain amount of serous fluid, for which drainage must be provided. Of course the exudation from this wound will be very slight, not sufficient to cause irritation if confined within yielding tissue. But taking place as it does within the pericementum, confined between bony walls, and in connection with a somewhat increased flow of blood and the formation of a blood-clot, it is quite sufficient in many cases to cause that soreness which often follows immediate filling. The application of a liquid dressing to the canal, sealed hermetically at the tooth-cavity, gives a certain amount of drainage, and when the parts have come to a state of rest the canal may be safely filled. After removal of the pulp by arsenic trioxid the parts are usually in such a state of rest that immediate filling may be practiced.

Crown and bridgework. The application of bands to roots, no matter how well fitted, is empirical, although it is not to be denied that a tolerance to the edge of gold, little short of marvelous, is displayed in many mouths. Some practical means must be found of obtaining an inlay margin for all gold applied beneath the gum margin, as well as on the crown of the tooth. But this is not all. How many times do we see bridges which should never have been inserted, whose abutments are rapidly loosening after only a few years of service? The patient doesn't blame the den-

tist—he says that the bridge was all right, but the teeth loosened up. Even supposing his motives to be above reproach, the dentist who fails to take into account the prognosis of a case, in this as in other branches, has not approached his work in a scientific way.

Pyorrhea alveolaris. Around the affections grouped under this generally accepted name rages the battle of local cause, systemic cause, and all the local and general treatments recommended by many men. To say that the cause is entirely local or entirely systemic, or to look to the discovery of one drug or combination of drugs which will eradicate this—the dentist's worst foe—is to convict oneself of empiricism. Destructive affections of the pericementum are often obviously local in their origin, although quite as frequently they are as obviously systemic, and both local and systemic causes are varied. Most assuredly scientific treatment must begin by ascertaining the cause or causes, and then working to eradicate them, and no one treatment will do this. In this connection mention should be made of the excellent paper on "The Relation of Diet to Interstitial Gingivitis," by Dr. C. T. Stockwell, in the *Dental Cosmos* for August, 1907, which opens up a new vista in the treatment of these conditions. When we understand the relation of diet to metabolism, and the relation of both of these to elimination, together with the disturbing factors of local conditions, and when we are able to control our patients' diet and general systemic treatment, then shall we have begun to treat this many-named disease in a scientific manner. In addition, it should be needless to say that whether the origin be systemic or local, the perfect freedom of the affected parts from calculi and other irritants, and their placement in a state of surgical rest, is universally indicated.

The points here indicated have necessarily been limited to a very brief discussion. It is not the purpose of this paper to advance the writer's views on specific points of practice, but to bring to dentists a realizing sense of perhaps unsuspected empiricism in their practice. And the cure for this condition, a scientific mode of thought, can only be attained by acquiring and assimilating a knowledge of the fundamentals of the sciences bearing on dental practice, and their relation to each other, and then applying that knowledge in the treatment of the pathologic conditions encountered in the mouth.

Physiology, the science which treats of normal function, should be the basis of such study, since a knowledge of anatomy, histology, bacteriology, and, more especially, pathology, will be of but little avail unless we know the normal functions of the body and its parts. Depending on this, comes pathology, inextricably linked to physiology, because it is the study of function in an abnormal state. General physiology and general pathology should be studied not with a view to acquiring a mass of facts, but with the object of understanding the working of the human body. Study digestion with regard to the splitting-up of the different classes of foods into their respective end-products, and its relation to assimilation. Study metabolism and the elimination of its products. Study these processes with regard to tissue degeneration and regeneration. Study, too, the circulatory system, especially in its minute ramifications and its control by the vasomotor nervous system, both in health and disease. Learn thoroughly the processes grouped under the name "inflammation." Learn that inflammations in the various parts of the body vary mainly through the influence of the type of tissue and the environment in which they occur. Study the relation of bacterial invasion to inflammation and tissue destruction, and the effect of this upon the circulation. Study ensuing tissue regeneration through assimilation of food elements and elimination of toxins. These phenomena are involved in the bulk of the pathologic conditions found in the mouth, modified in their manifestations by the type of tissue and the environment in which they take place. Bear in mind, also, that every filling, crown, bridge and denture is a foreign body, and as such is a source of more or less irritation, according to its nature and situation. Only by thoroughly understanding these phenomena and keeping them in mind can the various operative and mechanical procedures be properly undertaken. All this, of course, must be accompanied by a knowledge of anatomy, histology, bacteriology, therapeutics and a special study of the physiology and pathology of the oral tissues, with their relations to each other and to the rest of the body.

With this groundwork of scientific knowledge at hand for everyday use, and as an ideal the restoration of parts to a normal condition, we may properly perform the many simpler services of our

profession, successfully solve many baffling problems, and pave the way for true scientific advance. To carry out such a program means diligent study and thought. And we can scarcely do less if we are to consider ourselves the equals scientifically and professionally of the holders of medical diplomas. However, emulation should not be our stimulus, but the ambition to eradicate any possible taint of empiricism, to become truly men of science, and by that means to best serve the interests of our patients.—*Dental Cosmos*.

METHODS OF REMOVING PULPS FROM TEETH AND SUBSEQUENT TREATMENT. By J. P. Buckley, Ph.G., D.D.S., Chicago. There are many problems continually arising in the practice of dentistry wherein it is difficult for the conscientious operator to decide upon a method of procedure which will conserve the best interest of the patient. In no condition do we find this problem more complex and difficult to solve than in those cases where the decay has extended to such a depth that its thorough removal will expose, or nearly expose, the pulp. In all such cases we are called upon to decide whether it will be best for the patient to try to save the pulp, or to devitalize or anesthetize the organ, remove it and subsequently fill the canals.

In the beginning of my practice, acting upon a supposed sense of duty, I attempted to save many pulps which I learned later would better have been removed; and from this sad experience I have been led to adopt the following general rule, viz.: *That the safest and, therefore, the best practice is to destroy the vitality of, and remove the pulp in all cases where this delicate and susceptible tissue has been irritated for any great length of time, unless there be some special reason for attempting to restore the organ to its functional activity.* However, I do not wish to convey the idea that I favor the miscellaneous or ruthless destruction of the pulp, for such is not the case. I believe the plain duty of every dentist is to save the pulps of teeth in all cases where it can be attempted with any reasonable hope of success. But in view of the many failures following the most careful method of protecting and capping the pulp, I feel justified in following the general rule above given.

Having decided that the removal of a pulp is indicated in a given case, the method by which this can be accomplished with the least inconvenience to the patient, and to the operator, is the most important consideration. Whatever method is employed, there are several factors to be observed, such as to establish and maintain asepsis during the entire operation, preserve the color of the tooth, and thoroughly fill the root. All things considered, and conditions being equal, I am of the opinion that the very best method of removing pulps from teeth, and the subsequent treatment, especially in molars and bicuspid, is to devitalize the organ by the use of some arsenical preparation. At the second sitting thoroughly remove the dressing, open into the pulp chamber and hermetically seal in some thymol solution, and at a subsequent sitting remove the pulp, dry the canals and thoroughly fill them. This does not mean that I do not employ the anesthetization method of removing pulps from teeth, for I do, as will be explained later on in this paper.

There has been much difficulty experienced in the use of arsenic trioxid as a devitalizing agent, largely because of the uncertainty of the preparations employed. Many arsenical preparations are on the market. The white powder can be used by moistening a small pledget of cotton with some liquid, such as phenol, cresol, creosote or oil of cloves, then by touching the cotton to the powdered arsenic trioxid; a sufficient amount will adhere which should be transferred to the cavity and sealed, preferably with cement. It is well for each operator to select an arsenical preparation with which he can obtain good results, to be used to the exclusion of all others. By this means only can we become thoroughly familiar with the action of the preparation employed. The writer prefers a paste, a formula for which is here given:

R Arseni trioxidi.....3j
 Cocainægr. xx
 Mentholgr. v
 Lanolini..... q. s. ad ft. stiff paste
 M. Sig.—Apply a small amount to the dentin
 immediately over the pulp.

NOTE—A sufficient amount of lamp-black should
 be added to color the paste,

In those cases where the tooth has ached before the patient presents for treatment it is always the best practice to allay the pain for at least twenty-four hours before attempting to devitalize the pulp. In any case, whether the tooth has ached or not, it is best, before applying the arsenical preparation, or before adjusting the rubber-dam, to break down all overhanging edges of enamel and carefully remove or wash out with a non-irritating antiseptic solution any food stuffs or debris which may be in the cavity. Food stuffs contain albumin, and if such is in the cavity of the tooth when the arsenical preparation is applied, the arsenic trioxid will act upon the albumin, forming arsenic albuminate, and thereby a certain amount of the agent is neutralized or becomes inert. As much of the carious dentin should also be removed as can be done without producing pain, for the application should be made to a sensitive spot in the cavity. It is never necessary to have an exposure of the pulp, and in case an exposure exists, it is best to apply the preparation to the dentin immediately over the pulp, rather than directly to the organ itself. The preparation should be covered with cotton or small metallic or paper discs to prevent pressure, and also to prevent the phosphoric acid of the cement from coming in contact with the ingredients of the paste.

There are several factors which govern the length of time an arsenical application should remain sealed within a tooth, such as the strength of the preparation used, the age and general condition of the patient, and the general condition of the pulp itself.

Taking into consideration these various factors, the arsenical preparation should remain in the cavity from two to six days. At the second sitting the rubber-dam should be adjusted, the teeth included sterilized, and the cement and paste removed, after which every surface of the cavity should be freshened with a large round bur. This not only insures the thorough removal of the arsenical paste, which, should a portion remain, is liable to produce pericemental inflammation, but also *mechanically* sterilizes the cavity by removing the carious and infected dentin. This is important and is an aid in *maintaining asepsis* in the removal of the pulp. In my judgment, this is much better practice than to depend upon a solution of dialysed iron to neutralize the arsenic trioxid.

The pulp chamber can now be freely opened and the pulp re-

moved, or, which is by far the better practice, an antiseptic sealed in the chamber for a time to give nature a chance to separate the dead from the living tissue in the apical area. The solution which I prefer here is what I call modified phenol, the formula for which follows:

R	Menthol	3j
	Thymol	3ij
	Phenolis (95%).....	f. 3iij
	M. Sig.—Use as directed.	

Thymol has been recognized for years as having a peculiar and preservative action on dead animal tissue. For this reason it is a constituent of mummifying pastes. At a subsequent sitting the pulp can be removed and the canals filled.

The selection of a proper broach is an important matter. Every broach should be tested before entering the canal. This can be done by bending it in various directions. If the broach is weak in any particular place it can be detected by this means; thus we avoid breaking the broach in the canal, the removal of which is often a difficult procedure. Many good operators claim to be able to remove all pulps by using a smooth three-cornered broach on which a few threads of cotton are wound. Others use twist or spiral broaches. In all large canals I have had the most satisfaction from the use of a barbed broach. The broach should be gently worked along the side of the canal as far as it will go without using too much force, twisted once or twice to entangle the pulp, and then withdrawn. By this means the pulp can be removed from large canals in its entirety.

In connection with the preservation of the color of the tooth I desire to refer briefly to a well-established practice of treating teeth after the pulp has been devitalized. It is, or was, at least, the practice of many dentists, after removing the arsenical dressing, to flood the cavity with a solution of dialyzed iron, after which the pulp chamber is opened into, usually producing some hemorrhage; then, without any special effort being made to remove the dialyzed iron or blood, tannic acid in some form was sealed in contact with the pulp for a week or ten days, with the thought that it is advantageous to constrict and toughen the tissue before attempting its removal. Let us consider the rationalism of such

treatment. The pulp tissue in all large canals is sufficiently tough to be removed in its entirety, and it must be disorganized or removed piecemeal in small canals whether it has been previously constricted or not. Hence, there is no advantage in using tannic acid, and there is a serious objection. If those who follow this practice are observing they will notice that, after removing the tannic acid dressing, the pulp tissue is dark in appearance. They will also observe that many teeth thus treated subsequently discolor. The cause for this is found in the fact that tannic acid and iron, in any form, are chemically incompatible, the resulting compound being *iron tannate*, one of the most insoluble substances known to chemistry. In the presence of moisture a form of ink is produced which is a great staining agent for dentin, and one that is almost impossible to remove by any known process of bleaching.

While I am firmly of the opinion that the very best method of removing pulps from teeth, and the subsequent treatment, all things considered, is the devitalization method, yet there are many advantages in the anesthetization method, and, if carefully used, good results are possible.

I shall now direct your attention to a discussion of this method.

Our object here is to anesthetize the pulp by forcing various solutions of local anesthetics, usually cocain hydrochlorid, into the tissue by means of pressure. The pressure is applied either by using unvulcanized rubber or guttapercha and a blunt instrument, or by specially devised instruments for this purpose. There are many such instruments on the market, and while they are often an aid in accomplishing the ultimate result, they are not an absolute necessity.

The rubberdam should be employed in every case where it is possible to adjust it, and the teeth included sterilized; in cases where the dam cannot be adjusted it would, doubtless, be best to remove the pulp by the devitalization method, to which reference has been made, for in using the method under consideration, care must be taken to prevent pericementitis following the operation; and one of the precautions to be observed in preventing this result is to *thoroughly sterilize* the cavity before applying the pressure. It should be remembered that the majority of canals which contain

live pulps are sterile, generally speaking; and if they become septic at any time before the root is filled, it is the fault of the operator. Thus the importance of always adjusting the rubber-dam, using sterile instruments and having in a convenient and conspicuous place an antiseptic doily on which to wipe the blood and dry instruments used.

Attention is again directed to the fact that the usual custom of applying coagulating agents, such as phenol, cresol, etc., to the cavity for a few seconds does not sterilize the dentin to the degree desired. The best results are accomplished by employing germicidal agents which are soluble in water. In cavities where the decay is not too deep, the dentin can be sterilized by the use of a ten per cent solution of formaldehyd, to which five per cent of borax or sodium carbonate has been added. Where the decay is near the pulp, this solution is liable to cause pain, in which case the same result can be accomplished by the use of a 1-500 solution of mercuric chlorid. In using the latter solution the pliers on which the remedy is applied should be wiped immediately on an antiseptic doily to prevent the mercury from acting upon the instrument. One of the best solutions with which to chemically sterilize the dentin, especially in those cases where the cavity has previously been filled and the tubuli are closed, and where, perhaps, there is secondary dentin, is a twenty-five per cent solution of sulphuric acid. This solution can be applied to the floor of the cavity, being careful to not get the same on the crown of the tooth. After a few minutes the excess can be neutralized with a solution of sodium bicarbonate. When the dentin is sterilized the cavity should be desiccated with warm alcohol and gentle heat, and then we are ready to use the anesthetizing solution. I desire here to emphasize the importance and necessity of cavity sterilization. In our discussion of the devitalization method we pointed out that the carious and infected dentin can be completely and painlessly removed after the devitalizing agent has been applied, thus *mechanically* sterilizing the cavity, but in the anesthetization method the infected dentin is sensitive and cannot be removed without unnecessarily producing pain. The dentin in this case, then, must be sterilized by *chemical* means, for to force the anesthetizing solution through the dentin without previously sterilizing means the forcing

of microorganisms, and perhaps poisonous ptomains into the pulp tissue and many times into the tissue surrounding the apical end of the root, for it is difficult to force the solution to, and only to, the apex. Thus too much pressure and the lack of thorough sterilization constitute a prolific source of pericementitis following the removal of pulps by this method.

With the cavity thoroughly sterilized, we are now ready to use the anesthetizing solution, which should be made at the time. For this purpose the crystals of cocain hydrochlorid, previously powdered, should be used as the base, and freshly distilled or boiled water as the vehicle. In my own practice I use the flaked cocain hydrochlorid as the base, and my regular local anesthetic solution as the vehicle for making the stronger solution. A prescription for the regular local anesthetic solution here follows:

℞ Cocainæ hydrochloridi.....gr. v
 Phenolism. ij
 Aquæ menthæ piperitæ.....f. ʒj
 M. Sig.—Use as a local anesthetic for hypodermic injections.

The flaked cocain hydrochlorid not only insures a pure specimen of the drug, but facilitates making the solution, as the flakes are so readily soluble. There is no advantage in using the above solution over distilled or boiled water or freshly prepared peppermint water, except that the solution is always at hand in a convenient container, and is sterile.

The details of applying the solution and confining it under pressure, which insures the success of the operation, are well understood and need not be discussed here. Care should be taken, however, not to force the solution any farther than is necessary for the painless removal of the pulp for cocain is a general protoplasmic poison, and if even weak and sterile solutions are forced through the end of the root, pericementitis will invariably be produced. When the pulp is anesthetized, it can be removed in the usual manner.

In the removal of live pulps by the anesthetization method there necessarily would be more hemorrhage than in those cases where the pulp was devitalized before attempting to remove it. However, the control of hemorrhage is not as difficult a procedure as many

writers have led us to believe. In most cases the hemorrhage, if undisturbed, will be checked by nature's method in a few minutes, after which the blood in the cavity and canal should be *thoroughly removed*. I desire here to emphasize the importance of *removing* the blood. One of the factors to be observed in removing pulps from teeth, and the subsequent treatment, is to *preserve the color of the tooth*. The cause of many teeth darkening after the pulp has been removed can be traced directly to the failure to remove the blood from the dentin of the crown of the tooth. The far too-prevalent practice of wiping out the bloody canal with a solution of hydrogen dioxid, blindly thinking the blood can be removed by this means, cannot be too strongly condemned. The hydrogen dioxid simply decomposes the blood within the tooth structure, oxidizing the iron of the hemoglobin, and the gases evolved in the decomposition force the pigment into the tubuli, which, if left (and it is difficult to remove it), will cause the tooth to darken in almost every instance. In articles previously published I have shown that ferric oxid is largely responsible for the discoloration of teeth from pulp decomposition. Therefore, we should avoid forming within the tooth structure the pigment which we know will discolor teeth. *The color of a tooth does not depend upon the life and vitality of the pulp, but upon the array of colors in the dentin which are reflected through the nearly colorless and transparent enamel*. If, then, these colors are not changed by our failure to remove the blood or by the use of staining remedial agents in the subsequent treatment following pulp removal, the tooth will not discolor.

To remove the blood from the canal, alcohol can be used or even better than this agent, is nature's greatest solvent, water. The water should, of course, be sterile, and if convenient, a little sodium chlorid (common salt) can be added to it. By this means the blood can be completely *removed*—not decomposed in the canal, and forced into the structure of the tooth.

There are many canals so small and tortuous that even a fine broach will not enter, to any depth, at least. In these cases, after the hemorrhage from the larger canals has been checked and the blood removed, the pulp in the small canals can be disorganized by the use of strong solutions of mineral acids or alkalis. The

writer prefers making a paste of sodium dioxid and absolute alcohol, placing the paste in the pulp chamber over the small canals and working it down as far as possible with a smooth broach. The alcohol gradually evaporates, when the sodium dioxid can be decomposed into oxygen and caustic soda by placing a pledget of cotton in the cavity moistened with distilled water. After the reaction has taken place, the alkali can be neutralized with a weak solution of sulphuric acid (two per cent). This process can be repeated until the desired end is attained. There are other means by which the same result can be accomplished, such as the use of pure phenol-sulphonic acid, a fifty per cent solution of chemically pure sulphuric acid, strong solutions of sodium or potassium hydroxid, or a mixture of metallic sodium and potassium (Schreier's paste). These same agents, especially the phenol-sulphonic acid, can be used to advantage for the purpose of disposing of a remnant of a pulp in larger canals. It is not safe to anesthetize this remnant by means of pressure. The only cases on record, to my knowledge, where toxic symptoms have resulted from the removal of a pulp by pressure anesthesia followed an attempt to anesthetize a remnant of pulp, or from the second application of the anesthetizing solution.

After the pulp has been removed and the canals dehydrated with alcohol and heat an *anodyne* treatment is indicated. For this purpose such drugs as phenol, oil of cloves, or eugenol can be employed. I much prefer to use modified phenol, to which attention was called earlier in this paper.

In using any of these remedies, especially the last named, it is best to insert dry cotton in the canal and then place a pledget dipped in the remedy in the pulp chamber and seal with temporary stopping or cement. The dry cotton in the canal will absorb the moisture from the apical end of the root and the anodyne remedy from the pulp chamber. There is an advantage in using the dry cotton, for it is almost impossible to completely dehydrate the canal at this sitting. If asepsis has been maintained in removing the pulp, all that is necessary is to keep the canal in this condition until the root can be filled. The canals should not be filled at the sitting at which the pulp has been removed by pressure anesthesia unless there be some exceptional reason for doing so. The case

giving a favorable history, the canals should be filled at the second sitting.

Before closing, I desire to discuss briefly the use of solutions of adrenalin chlorid as the vehicle for making the anesthetizing solution or the use of adrenalin chlorid and cocain hydrochlorid tablets for anesthetizing the pulp. The adrenalin chlorid has been suggested as a means of *preventing* hemorrhage. Now, it ought to be evident to anyone who has studied this subject that to prevent hemorrhage by the use of any hemostatic agent it is necessary to force the agent into the tissue from which the hemorrhage proceeds. Therefore, to get the effect of the adrenalin chlorid in removing pulps by anesthetization, it is absolutely essential that the anesthetizing solution, which also contains the hemostatic agent, be forced through the apex and into the apical area—the very thing we have been taught from sad experience not to do.

When we remember that the majority of pulps we are called upon to remove are those in which there is or has been more or less pulpitis, and when we remember also that pathology teaches that this condition is frequently associated with pericementitis, it is questionable whether or not we ought to prevent hemorrhage in removing pulps from teeth. For, to permit the escape of blood from the hyperemic tissue at the end of the root, is one of the best means of aiding nature to readjust the abnormal to the normal condition. In case the primary hemorrhage has been prevented by the use of hemostatic agents, such as adrenalin chlorid, secondary hemorrhage is almost certain to follow with the formation of a clot, the absorption of which in the apical area is an extremely slow and tedious process.

There are many complications met with in daily practice wherein it is difficult to remove pulps painlessly by either the devitalization or anesthetization method. Many times, for successful results, it is necessary to use a combination of the two methods. Time will not permit me to discuss this phase of the subject.

In closing, I desire to reiterate the statement which I made earlier in the evening: That it is the plain duty of every practitioner to save the pulps of teeth in all cases where it can be done with any reasonable degree of success; yet experience and observation will soon show the folly of attempting to save a pulp that

has been irritated for any great length of time, and will prove also that, in these cases, the safest practice is to remove the pulp and subsequently fill the canals, notwithstanding the difficulty often attending the performance of this operation.—*Dental Brief*.

AN UNUSUAL CASE OF NECROSIS OF THE MAXILLA. By B. J. Wood, L.D.S., Eng., Kettering, England. I wish to present the following case to you, because not only is it somewhat unusual, but because it opens up, I think, a field for profitable discussion as to how far it is practicable in everyday practice to carry on our operations aseptically.

The patient, a girl aged 14, had large cavities in both centrals, which I proposed filling with gold. I commenced on September 10 of last year to prepare the cavities, and found that both pulps were exposed, the exposures being small and the pulps apparently not infected, there having, at any rate, been no pain up to the time that I commenced operations. The rubberdam was adjusted, the cavities swabbed out with mercury bichlorid (1 part in 500 parts of absolute alcohol), the pulps removed after being anesthetized by the pressure method, and the pulp canals swabbed out with pure phenol, a dressing, the latter being left in each canal and sealed with Gilbert's guttapercha. A week later, the teeth having been quite comfortable, the roots were filled with guttapercha, rubberdam being used, the canals swabbed clean with bichlorid in absolute alcohol, and dried with hot air, the pulp chambers subsequently being filled with Harvard cement. The apical openings of both root canals were rather large, as we should naturally expect at 14, and there was just a slight soreness on pushing a broach up, but nothing unusual.

On September 24 the right central was filled with gold, and then, for various reasons, the filling of the left central was postponed from week to week, until I finally arranged to fill it on October 27. The patient came to me on that date complaining that separating the teeth had made them very tender, and that her face had begun to swell over the left central, this being the first indication of any trouble at all. On examination I found that there was a considerable amount of pericementitis, accompanied by swelling, and I decided that it would be best to remove the

root filling, which I did, leaving a light iodoform dressing in the root, and the cavity open, and ordered hot fomentations. I saw the patient the next day, and found that the swelling under the lip had increased in size, and that there was a large swelling in the palate. I incised both these swellings, and advised sending for the family physician, who ordered the patient to bed. Next day the swelling had enormously increased, extending right along the hard palate as far as the molar region. Pus was welling down the socket of the tooth; the temperature over 100° F. We decided to extract the central, as the general condition of the patient was somewhat alarming, and the tooth itself was very loose. Having done that, I left the case in the physician's hands, expecting to hear that the trouble had gradually subsided. Imagine my surprise on learning that the doctor had a few days later extracted the second upper bicuspid, a tooth which had one small filling not involving the pulp chamber, and which was perfectly sound. I went at once to see him, and he told me that the tooth he took out was in quite as bad a condition as the central, and that he had, on two separate occasions, made incisions in the palate to try to drain the abscess cavities, but without success, and it was only in the last resort that he had extracted the bicuspid.

The patient after that slowly mended, but when I saw her the first time she was allowed out, in November, there was still very considerable swelling in the palate, extending back to the molar region; the socket of the central was still unhealed, and there was necrosed bone in the bicuspid socket. The patient's general health was surprisingly good. I saw her again in a fortnight (the physician still being in attendance on her), and on probing up the bicuspid socket I thought I detected a movement of the lateral. I then probed the central socket, but was unable to detect any dead bone. At a subsequent visit I applied a red-hot burnisher to the lateral and cuspid (both sound teeth), but was unable to get any response, although the teeth on the right side responded instantly to a much less heat. I then probed the bicuspid socket very carefully, and was able to definitely decide that the whole of the process from the bicuspid to the central was capable of slight movement as a whole, it being possible to move both teeth that were standing, by resting the probe on the dead bone in the

bicuspid socket, it being evident from this that there was extensive necrosis.

I extracted the lateral and cuspid on December 17, and from time to time pieces of bone were exfoliated, the wound being syringed three times a day with "Izal" by the patient's mother. The physician and myself saw her periodically, but it was not until the middle of July this year that the last piece of bone came away.

I will not weary you, gentlemen, with a dissertation on the possible causes of all this trouble, but will assume straight away that it was primarily brought about by infection of the periosteum, either during the operation of extirpation of the pulp or root filling, and that the unusual severity of the case was sufficiently accounted for by the general health of the patient at the time and the lowered vitality of the parts owing to the separation of the teeth, which may quite well have been the exciting cause.

The point I want thrashed out is: "Is it possible to insure absolute asepsis in dealing with root canals?" For my own part I do not think it is. It is easy enough to render one's instruments aseptic, but is it possible to keep them so under the conditions in which we work?

"Is it possible in everyday practice to spend ten minutes sterilizing one's hands every time one has to treat a root canal, and having sterilized them, can they be kept sterile while operating?"

This may sound rank heresy, but it is no good blinking hard facts and indulging in make-belief as to what is asepsis, like the careful gentleman I once met who always used a new Donaldson straight from the packet for each case of pulp treatment, and, I suppose, believed he was doing aseptic operations in consequence of his extravagance. At the same time, although I do not believe that it is possible to insure absolute asepsis, it is, nevertheless, our plain duty to take all practicable precautions to prevent infection of root canals.

Two or three practical points occur to me as arising out of this case. The first is, that the use of adrenalin chlorid as a solvent for cocain in pressure anesthesia is not advisable, seeing that adrenalin chlorid solution will not remain sterile for any length of time, so that in using it we run the risk of infection quite unneces-

sarily, as there is really no need for the adrenalin at all; any other solvent, even water, being quite efficacious. Personally, now I use absolute alcohol, but any definitely antiseptic, non-irritant solvent would, I suppose, answer the purpose quite as well. A second point in connection with pressure anesthesia is that the cavity should be as free from carious dentin as possible and should be swabbed out with some powerful antiseptic, which must act quickly. I hesitate to introduce the question of root-filling materials, but there is just one point, I think, worthy of note, and that is, that where guttapercha is used it ought to be combined with antiseptic dressings. Personally I use a mixture of creasote, formalin, thymol, zinc oxid and alum.

At present I keep my root-canal instruments for twenty-four hours after use in pure lysol, transferring them at the end of that time to test tubes, which have been sterilized by boiling and swabbed out with lysol. This is not altogether a satisfactory arrangement, as it is still possible to infect the instruments in taking one of them out of the tube, and I am considering the possibility of having a metal dish made to hold Donaldson's bristles, root-canal drills and root fillers, so that any one instrument can readily be got at with tweezers, and the rest of the instruments kept away from all other instruments and one's hands, for it seems to me evident that root-canal instruments call for more special precautions than any other instruments we have.

I hope you will forgive me for insisting on points that, in themselves, may seem trivial and to you self-evident, and will agree with me that while we should be careful to keep our minds clear of cant on this matter of asepsis in dental surgery, at the same time an occasional discussion as to how practical asepsis can be most conveniently and certainly obtained cannot fail to be of benefit, at any rate, to most of us.—*British Dental Journal*.

IDEALS IN PROFESSIONAL LIFE. By James Edward Power, D.M.D., Providence, R. I. With not a little hesitation, I have chosen to address you tonight on what constitutes success in professional life. The question of success in life, whether professional or otherwise, is, of course, the most serious problem which

the thinking man has to face, and so it is the first business of any intelligent man to determine for what good he is striving. Because, therefore, of the primal importance of this question to all men, it has, in its broadest or largest aspect, earnestly engaged the greatest minds of every age—philosophers, poets, teachers, political, social and religious reformers—all have given notable answers to this fundamental question, "What is it that is really worth striving for?" And if perhaps my endeavor to discuss this problem seems presumptuous, remember that I am only trying to say again what wise and great men have already said many times. You see, therefore, that the subject is almost as old as time itself. But such a problem as this constantly recurs; any ideal that is really worthy must needs be reiterated constantly, and preached with the utmost emphasis before even a few men can be made to hearken and act thereon.

What, then, shall be considered success in professional life? In this day of strife, in this day of commercial activity, which we are pleased to call civilization, many men show by their efforts to accumulate fortunes that wealth is for them the chief object of attainment.

Not in our profession merely, but also in law and medicine, is the estimation of a man's success calculated in terms of his material possessions. The degree of success, according to this standard, is in direct ratio with the number of dollars which the individual owns.

This same spirit of Philistinism has permeated the ranks of our profession, for how often do we hear one of our confreres heralded as great, for the reason that for his services he received five, ten, perhaps fifteen dollars an hour? Wealth, gentlemen, is not true success; it is only a means, not an end, and if we measure success by money, in order to be consistent, we must concede that the charlatan or advertising man, who is a recognized menace to all progress, is a successful man, since he gets more money in a given time than many of his ethical brethren.

The world is expressing a true and ultimate judgment upon the lives of the men who have passed away. The world is also placing its seal of condemnation upon all efforts whose inspiration is merely wealth. The jingling of gold or silver has not the true

ring of success. It is simply a discordant noise which the unhappy miser, in his narrow mind, mistakes for music.

"Gold, gold, thy clear and echoing sound
Hath through the ages rung the knell of death and woe,
And Labor's toiling thousands have been ground beneath thy
tyrant heel.

Noble purpose; high ideals,
That reach to Heaven's vaunted blue,
Hath thy dread power laid low.
What is there in this metal, hard and cold,
That sweating, struggling millions strive to win?"

We speak of the glory which is Greece's, and the grandeur which is Rome's, but in vain do we seek for the names of the wealthy Greek and Roman.

On the other hand, who were Socrates, Plato, Æsculapius, Ptolomy Alexander, Hippocrates, Cicero, Celsus, St. Francis, St. Vincent de Paul, and Lister, and Liebig, and Ambrose Parré? Immediately, you reply, they are the heroes and saints and men of genius, whose names are writ large upon the scroll of time, and whose memories shall be as sweet perfume in the years to come; yet not one of them was possessed of wealth. What, then, are their claims to greatness?

You all know, gentlemen, that Hippocrates was the greatest physician of ancient Greece, and that he expressed views relative to the teeth, centuries before the circulation of the blood was ever dreamed of, which, after two thousand four hundred years of study, are found to be absolutely correct. You know, also, that Celsus was a Roman, probably a physician, who wrote a book, "The Medicine," which embraced all the views of the Alexandrian anatomists; and that Ptolomy Alexander was one of the men who caused the establishment of the Alexandrian University, the only perfect university which the world has ever known. You would tell me that Socrates went barefoot preaching to the Athenian dandies; and that St. Francis, leaving wealth and luxury and titles, lived a long life of self-denial, ministering to the poor of Europe; that St. Vincent de Paul did the same thing among the children of France; that Liebig, the master of agricultural chem-

istry, the man who had reached that degree of perfection that seems almost impossible for any one man to reach in a lifetime, just before his death, said, "If only I had the power to work as of old, I would be happy;" that Lister solved many of the problems of diseases; that Ambrose Parré was a Frenchman who lived in the fifteenth century; that he commenced life as a barber-dentist, finally becoming surgeon-general to the French Army, and died after having served four kings of France, in the capacity of dentist; and so on and on I might go, only to show that it was the profound reasonings of Plato, the medical skill of Æsculapius, the philanthropic depths of Socrates, the moral simplicity and grandeur of St. Francis, and the fiery eloquence of Cicero. These are the things that have rendered them immortal, and everything which I have mentioned, gentlemen, is in some sense the realization of an ideal.

Is skill to be desired for its own sake? A career that holds this ambition as its beacon light is not only disappointing, but is foredoomed to failure and disillusion; for however great the perfection to which we may attain in our chosen field, none the less are we but narrow specialists, since we lack that largeness, that openness and flexibility of mind, which only a wider knowledge brings.

A botanist may, with the greatest ease, differentiate the minutest details of every flower in the garden; an anthropologist may, with recovered bones, reconstruct forms that existed thousands and thousands of years ago; an astronomer may tell you how long it would take, on an aerial railway, to reach the man in the moon; a microscopist may discourse upon the number of microorganisms that may be placed on the point of a needle; a pathologist may tell you, after an examination of a section of tissue, whether or not such tissues will destroy life. Yet none of these men can claim greatness if his possessions consist of these capabilities alone.

A genius is not necessarily a great man. He may be a Beethoven in the creation of sweet tones; a Raphael in the superior handling of the brush or pencil; a Michael Angelo in the magic skill of unfolding the beautiful forms which are hidden in every piece of granite; a Napoleon in his miraculous genius for war; yet not a great man.

Honor, reputation, fame, social position, are all desirable, but they in themselves do not make nor are they evidences of success. These in life are not the goal; they rather constitute the prize. Many times they may come unsought and undeserved.

What, then, do I consider to be the secret of a successful professional career? Simply this, the self-realization of an ideal, for it is our ideals that determine our thought and our actions; that keep us young, and sustain us in our hour of disappointment and trial. For, as Carlyle said, "What does it matter whether the ideal be made of this stuff or that, so long as the form we give it be heroic, be poetic?" A real successful life, then, is one which has for its stimulus *Ideals*. The ideals of culture, social utility and moral rectitude are those that make for the largest success in professional life.

All persons who wished to engage in the practice of medicine, during the time of Hippocrates, were obliged to take oath before God that they would respect all of the obligations which were contained in a document which was almost a psalm, and was known as the Hippocratic oath. Contained therein, were the ideals of Hippocrates, and it was these ideals which made Hippocrates the Hippocrates as we know him, which made the medicine of the Greeks the medicine of the world.

In order, therefore, to lead a successful professional life, we must have ideals which will stimulate that desire to help a fellow creature. To do this, we must first be good citizens, thereby having a direct interest in all things which will benefit or improve the social, religious or political conditions of our times. If we wish to make dentistry in reality what it is in name, a learned profession, we must familiarize ourselves with more than science, we must familiarize ourselves, so far as we can, with art, music and, most important of all, literature. Thus may we become cultured.

I speak not for that culture which places a person upon a higher, but false station; nor that culture which is used as a badge to absolve certain persons from respecting the rights of others; nor that which is transferred from one generation to another, in the form of a family tree, pedigree, or title; nor that which is wrongly used to designate social exclusiveness, but that kind that has for its one object the study of perfection, or, as Matthew Ar-

nold, its great apostle, says, that culture whose "origin" is in the love of perfection; it is a study of perfection. It moves by the force, not merely or primarily of the scientific passion for pure knowledge, but also of the moral and social passion for doing good. To render an intelligent being yet more intelligent. To make reason and the will of God prevail. Not a having and a resisting, but a growing and a becoming, is the character of perfection as culture conceives it; and here, too, it coincides with religion.

And here, too, the exacting duties which are required of us, as professional men, prevent us from knowing each other well, and that which we do know is not always truth. Therefore, the social obligations as Christ taught them are the only true ones. To love one's neighbor as one's self; to equalize one's neighbor as one's self; to elevate one's neighbor to that plane where we may regard him as our equal. On such a foundation was Christian society founded. Its age might seem to suggest its worth. While working along the narrow channels of a professional career does not in itself constitute success in life, it must be reckoned with as an etiologic factor in the attainment of a general success. Carlyle has said that the conditions which did not contain the actual for man did never exist. Our special work should be carried on, first, because we are in sympathy with and firmly believe in what we are doing; second, because we believe that we are contributing something to the happiness of the people. Let us, then, work, and as Emerson says, "hitch our wagon to a star." Again, we may remember the words of Carlyle: "Even though it be but the infinitesimal fraction of a product, it is the most thou hast in thee; out with it, then, in God's name, produce."

The professional man must devote his heart and head to the lifting up of the profession till it is synonymous with law, justice and right. If we are wise, we will go over the pages of its past, picking out those, pagan and Christian, that portray its progress from the crude laws that told men to take an eye for an eye, a tooth for a tooth, and a life for a life, to that splendid manifestation of its highest attainment found in the Christian doctrine, not only of doing unto others as one would be done by, but in that higher doctrine which decrees it a duty to forgive one's enemies.

Among the early pages of history, there is one that tells the story of the greatest of the pagan lawyers, Papinian, who, when Caracalla murdered his own brother, refused the emperor's request that he, Papinian, prepare a brief in the emperor's defense. Rather than obey he chose to die. Who was this Papinian? A poor and obscure lawyer? Not at all. His genius illumines the entire legal sky, not only of his time, but of the ages between his appearance at the bar and the time when the Justinian Code was completed. When Tribonian and the codifying committee appointed by Justinian to codify the laws of Rome were about to begin their great epoch-making work, Justinian bade them yield to Papinian's opinion, though Gaius, Ulpian, and many other of Rome's great lawyers were on the other side.

France, on a like occasion, points to D'Aguesseau, who, when asked by perfidious king to perjure himself, refused, and, like the others, chose death rather than sacrifice his loyalty to law, justice and right.

Words are only weak instrumentalities when one wishes to say what these men's purposes were in regard to their professions.

May these same motives, these same ideals, inspire us. These were the ideals which inspired the architects who built the most beautiful Gothic cathedral the world has ever known. The cathedral stands, but the names of the architects are unknown. Again these same ideals caused the unknown sculptor to carve that most perfect rose which was discovered a few years ago by a workman who was sent to repair the top of one of the columns of the cathedral of Milal. There he found the rose, facing toward heaven, which had rested in this position for over six hundred years, all unseen, or seen but by the eyes of heaven. Yet it was possibly the masterpiece of the artist.

Great success in life, then, is not calculated by the applause of the multitude, but is measured according to the services which we have rendered to the world and to its people, and the motives which inspired them. A man whose greatness among men is inspired by unselfish motives is the truly successful man. Self-knowledge, self-reverence, self-conduct, these then alone should lead life to sovereign power, and yet, as Tennyson says, "but not for power; power of itself would come uncalled for; but to

live the law, acting the law we live by without fear, and because right is right, to follow right, were wisdom in the scorn of the consequence."—*Items of Interest.*

SOME PHASES OF SURGERY IN ROOT CANALS.

R. E. Darby, M.D., D.D.S., Springfield, Mo. We cannot, at all times, deal with new methods and materials. At times, it is as much worth while to restudy an old problem or mode of procedure till its importance awakens in us a new interest. In this paper I have not attempted to relate anything startlingly new. It is rather a study of a prosy old subject that daily demands some kind of solution in nearly every dental office. In dealing with root canals, the fact that most of the field of operation is hidden often makes it a very delicate bit of surgery. It is as important for the operator to know the human make-up and functions in this field as it is for the oculist in his field. We must keep in mind that we are dealing with part of the human anatomy, with its physiologic functions or pathologic conditions. The pseudo professional man, who is wanting in both conscience and proficiency, may cover up many wrongs, but in most cases they will prove only palliative, not curative, and after a brief period the patient is driven by trouble, more grave than the first, to seek relief. Still, at other times, it is wonderful how the human economy can be imposed upon and tolerate an abomination while the operator empirically congratulates himself upon what he terms success. The intelligent, close observer must see in this, not a successful operation, but a wonderful power of endurance on the part of nature.

In this field of surgery, as in others, the operator must know not only how to cut, but when to cut, as well. If a tooth is opened containing dry mummified contents, it demands a surgical dressing, rather than extended excavation. It is much safer to seal for sterilization, for it may prove a slumbering volcano.

The dying pulp inside of closed walls is a condition often met. As soon as diagnosis can be made and trouble located, tooth opened and congestion relieved, relief from pain is given. Further treatment may be planned along usual lines. If, however, the patient is one day late in applying for treatment, something more

serious may have happened, and relief from pain is not so simple. When the tooth is opened, instead of relieving a congested pulp or draining an abscess already formed, we find a putrescent pulp. There is foul gas and fluid. The former may have driven the poisonous ptomains of the latter into the pericemental membrane. There is pericemental septicemia. It is too late to abort it. There is left to us only the alternative of controlling its severity through its course. The dentist is in danger of losing his reputation, and the patient, after much suffering, may demand the extraction of the tooth or turn in disgust to the family physician for relief. The dentist's reputation for ability and the dignity of the profession demand that such cases be given the time and thought necessary. It is no use to bore for pus; it has not formed yet. It is needless and risky to remove contents of canals. Neither would it insure immediate relief to extract the tooth. Effective sterilizing may be accomplished by sealing in cavity, without pressure, equal parts of phenol and forty per cent formaldehyd. The gums painted with tincture of iodine completes the local treatment for the present. The pain caused from the poisoning must in many cases be controlled by systemic remedies. The official acetanilid compound is very effective, but must be prescribed cautiously if there is a weak heart. Physicians, as a rule, are cautious with the coal tar preparations, and properly so. Still, this compound acts better for many people than opiates, and the severity of the case calls for the effective remedies. It is not best to simply recommend to patients tablets of this or other drugs for the relief of pain, as it might encourage the formation of a drug habit. It is safer to prescribe as follows:

R Pulveris acetanilidi comp., gr. XVI
Ft. Chartulæ No. IV.

Sig.—Take one capsule at once, another in one or two hours, if not relieved from pain. The others, four hours apart, if needed. There are liable to be complications and we meet also the family physician. If so, it is best for all concerned that we have a better understanding and more respect for what each is trying to do.

In treating all forms of abscessed roots, we cut heroically the first treatment. All secret chambers are opened and relieved of their contents, loaded with microorganisms. Few, if any, restric-

tions are put upon our procedure in these conditions, but if there is a copious flow of pus, better not dam up the stream, even temporarily, till after flood tide. There is no occasion for a nightmare over the question of coagulants or non-coagulants, for there is no albumen to coagulate. Most cases, if well drained, can be cured with the cleansing solution of *aqua pura*, plus nature. Still, it is safer and saves time to sterilize. In some of these cases there is still an oozing of serum after normal conditions are restored. This is harmless and may be controlled with phenol, the root dried and sealed permanently. Nothing is gained and much lost in treating a tooth for months, as some used to do. As a rule, normal conditions can be restored inside of two or three weeks; or perhaps as soon as appointment book shows time enough for a final procedure. A patient must not be allowed to think he is having a tooth treated when he is guilty of periods of neglect in which all that has been gained is lost.

Too many operators forget that the place to conserve tooth tissue is in the root. We can construct successfully new crowns, but so far we have not been able to successfully construct new roots. No operation on tooth crown can make a stronger tooth than the root on which it is constructed. Canals must be opened so apex can be sealed, or enlarged to admit dowel pin, but in either case, further cutting is in the direction of malpractice.

For the want of time, I pass the important treatment cases mentioned with but a hint as to proper management, so that I may have time to mention some details of instrumentation and permanent root dressing.

When the potassium and sodium preparation was announced to the world, in 1893, I considered it a great step in advance; but later almost discontinued its use, as I found other methods more effective in my hands for opening root canals. The sulphuric acid treatment promised much, but because of the associated pericemental inflammation had to drop it, except in some rare cases of crooked roots.

Instruments are much used these days for opening root canals. The skilful use of them will do as much to shorten the laborious hours of the dentist as any other aid of our times. Others must be considered among the most dangerous instruments that have

come into our hands. Many of the older, and some of the present, makes are too large and too clumsy, too much wanting in the possibility of application, to be considered by the prudent dentist. Some instruments advertised for opening canals would bore a hole too big for a dowel pin.

A broach for opening a canal should not be a drill. It must be remembered it is not our object to drill a hole, but enlarge an opening already there, so that the end of it may be properly sealed. The best instrument so far devised is a twist broach with a round point and does its reaming from the sides. It should be of very flexible tough steel. It should not be of the same diameter its entire length, but should taper as do the canals. Then it will prepare the opening so it can be positively filled and that without using a large, clumsy something with which to fill it.

For comparison, I wish to mention two types of twist broaches: The Downie and the Kerr. The latter I unqualifiedly condemn for general purposes. The Downie is of more scientific conception. It is well known that the company that makes both of these has a man going over the country demonstrating their goods, who argues that the drill-pointed broaches should be used, as they clear themselves of debris, while the round-pointed push it through the apex. That may sound reasonable to one who has thought only about the subject and is without clinical experience or knowledge of laboratory tests. A convincing laboratory test may be made by selecting a tooth with a curved root, open it with a fine Downie broach, then instead of using medium-sized broach of same make, take medium of drill-pointed variety. It will not even follow where the other has opened canal, but will leave it at the curve and pass through the side of the root. Repeated laboratory tests will show that the hard, dry specimens of crooked roots can be perforated, operating the drill by finger movements. What, then, is liable to happen with the softer teeth in the mouth when the same kind of drill is driven by the engine? Even if used cautiously and by finger movements, a root may be pitted, if not perforated so that no instrument will afterwards pass the curvature. A multicrooked tooth so perforated and filled, the filling passing beyond the perforation, makes an ugly case for some innocent man at a later date to diagnose and treat. The X-ray may be

called in to locate the extended fillings, and they may be surgically removed from within or from without, but in some cases this is very difficult to do, to say nothing of what it means to the patient. It would certainly be better to avoid such necessity.

A reamer is one thing and a drill is another. Is it not time to call a halt on the drill method of procedure? The method of using the reamer is important. They should be selected in assorted sizes and with short handles so they can be manipulated with the fingers, for nothing can take the place of the cultivated, delicate touch. It, being auger-shaped, must not be twisted deep enough in the canal to become fastened. Insert in opening, make a turn, then withdraw; then another turn, and withdraw, etc. It is surprising how this instrument will follow the windings of a small canal and with what rapidity and ease and safety the ordinary canal may be opened, when the fingers are trained to do it. A reamer of this style will cut away nodules along the canal walls. It makes elliptical or flat openings round, or, at least, the apical one-third is made approximately round. This makes sealing apex with a round point possible. It removes the diseased tissue along the entire canal which results from chronic abscess. They are ideal for carrying shreds of cotton to dry canals or to carry hydrogen dioxid for swabbing, or medicine to seal in root. For the latter, cotton is wrapped loosely, insert in canal and with a turn unwinding and at the same time pull against side of root, medicated cotton is left. They furnish the best means of applying both cocain hydrochlorid and pressure to upper third of sensitive canals. For this the cotton serves the further purpose of helping in the removal of particles of pulp tissue. The many uses to which this broach can be put greatly restricts the use of the barbed extractor. This all seems so simple and commonplace to one who has long used this method, it hardly seems worth while to relate it. Still, many who choose this method do not properly employ these aids.

The permanent root dressing should seal the canal perfectly. No dry cone alone is apt to hermetically seal apex. Some medium must be used that will adhere to canal walls, such as chloropercha or cement. If chloropercha is used, only a small quantity is needed. There is no advantage in using enough to make the oper-

ation sloppy. For carrying the liquid part of filling to place, I have found no better instruments than an assortment that can be made in a few minutes from old piano wire broaches. Cut off part of barbed portion, place two sandpaper disks, gritted sides together, carried by engine, turn broach at same time between disks and it is shaped as desired in a moment. Bend at obtuse or right angle and carry in broach holder. Or the liquid part of filling may be carried on small twist broach to all parts of canal by rotating backwards.

Guttapercha points should taper like the instruments used in reaming the canals. If the cone tapers too rapidly, it will close opening into canal before apex is reached, leaving an empty space. or if chloropercha has been used it will shrink and leave a chamber, which may gather and stagnate something from the blood stream, resulting in an abscess. For sterilizing, when not used with cement, the point of the guttapercha cone may be dipped in a solution of equal parts phenol and formaldehyd before inserting into the canal. If apex is normal, root filling may be pressed quickly and firmly to place, but if apical opening is large, as found in teeth not fully developed, or from the action of an abscess, ascertain, as nearly as possible, its diameter with blunt broach, then cut off guttapercha point accordingly. Moisten canal with chloropercha and press gently to place, wait a moment for point to slightly soften, then pack tighter. Remove excess of guttapercha as in all other cases with a warm instrument of a suitable shape.

If a root is to be prepared for a dowel at the same sitting, better use cement. If a crown is set on a root before the chloropercha at apex is thoroughly dry, the filling material may be so impacted as to cause a permanent unnatural feeling. A cement used for this purpose should not be one that crystallizes to a glassy hardness. It, being so much harder than the tooth substance, has a tendency to force the bur through the side of the root. The guttapercha point should be used in the cement.

It is unfortunate that any young man just entering the profession should be driven for want of means to seek employment in a dental parlor. There he must learn much of rush methods, the result of much of which is apt to prove a severe strain on

conscience for approval. Haste, before proficiency is attained, is fatal. A habit of careless, slipshod, sloppy methods once formed is apt to stay with the individual a lifetime, hence the importance of careful habits in all these things.—*Western Dental Journal*.

THE DENTIST'S RELATION TO PREVENTIVE MEDICINE. By Francis Ashley Faught, M.D., D.D.S., Philadelphia, Pa. This is preeminently an age of progress, of discovery, and advancement. The changes wrought by progress in the many fields of science and of art have been so rapid, and are so continuous, that it seems well-nigh impossible for the individual worker in any field to digest, assimilate, and apply the mass of material that is daily being placed at his disposal. Nowhere is the impress of this process of evolution so marked as upon the methods and teachings of the present day of the science of dentistry.

Dentistry has accomplished in two brief generations a result that has occupied medicine for centuries, until to-day the profession of dentistry is recognized and esteemed as a distinct and peculiar branch of the healing art, which shares an equal responsibility with the other specialties of medicine.

This burden of care and responsibility should extend to each and every dental practitioner—a fact which is at once apparent, when we pause for a moment to consider more in detail what constitutes the factor-complex of this change. Such a review will show that the forward march has been very general, and that advancement has resulted, not only through modifications and improvements in existing methods and practices, but also by the discovery and perfection of many entirely new ideas and processes.

Note the discovery and development of the science of bacteriology, and the explanation of caries upon a scientific basis, through the researches of Professor Miller. A working knowledge of anatomy, physiology, general pathology, materia medica, therapeutics, and hygiene, has become an indispensable basis for the successful diagnosis and treatment of many diseased conditions of the mouth and teeth.

The application of the X-ray and other special forms of light to diagnosis and treatment in both medicine and dentistry constitute a distinct epoch. Porcelain and other inlay fillings have al-

ready taken a place of considerable importance in everyday thought and practice.

The inevitable and logical result of this evolution has been to slowly and steadily approximate the interests of the sister professions of medicine and dentistry, until to-day, in the realm of specialism particularly, no distinct lines of demarkation exist among them. Nowhere is this bond of union so close as between the specialties of rhinology and laryngology on the one hand, and orthodontia on the other.

It is the nature and importance of the responsibilities developing

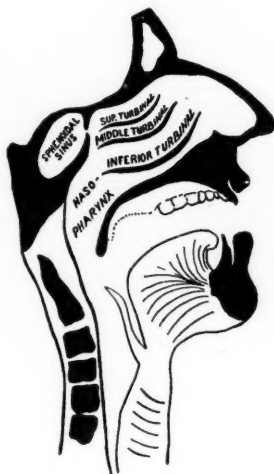


Fig. 1.
Diagrammatic sagittal section, showing relations of anatomic landmarks.

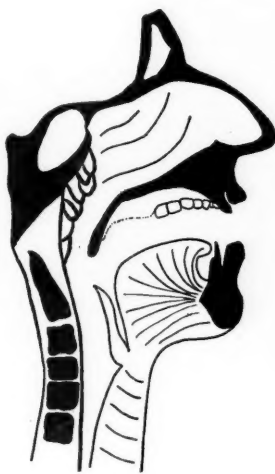


Fig. 2.
Adenoid vegetations. (Compare with Fig. 1.)

from this peculiar relation to which I would direct your attention this evening.

The dentist's responsibility, arising directly from the correlation of oral and nasopharyngeal disease, is probably greater than many have realized. This appears but natural when it is remembered that a knowledge of this special relation, and of its importance from both medical and dental standpoints, has only recently been recognized and studied. The literature on this pathologic relation-

ship up to the present time is very meager, and teaching and instruction on it is a course still to be developed. This is greatly to be regretted, and it is hoped that, with a more general appreciation of these conditions and their significance, a special course of instruction upon this class of conditions will be made eventually a part of the medical and dental curricula.

To better understand the nature of the relations alluded to it may not be out of place to review briefly the common obstructive lesions of the upper air-passages.

Adenoids—or, more properly speaking, hypertrophy of the pharyngeal tonsil—is the most common form of obstructive lesion found in this region. It is present as a complication in about sixty per cent of cases presenting dental irregularity. This ratio I believe to be too low, since it was determined from a series of replies to the question as to when such obstructions became apparent. I feel sure, therefore, that a systematic examination of all the cases of dental irregularity would develop figures of even more significance than the above.

This lesion, as will be seen by the illustrations, Figs. 1 and 2, is situated, not in the nasal passages proper, but behind them, in the nasopharynx. From their location it is evident that even slight encroachment upon this already narrow space will interfere with nasal respiration.

The usual symptoms of an average case of adenoid enlargement will be—some interference with nasal respiration, oftentimes only at night, when the child will snore or breathe through the mouth; or after some violent exertion, when he is forced to open the mouth to obtain a sufficient supply of air. There is also a marked tendency to repeated and chronic "cold in the head," as shown by a slight hacking cough, irregular nasal occlusion accompanied by anterior discharge of mucus from the nose, or the more annoying "posterior dropping," which results from a gradual collection of inspissated, sticky mucus in the nasopharynx which, slowly trickling down the uvula and the posterior pharyngeal wall, gives rise to frequent hawking. This catarrhal condition varies with the weather, usually being worse during damp and cold periods.

There is usually a characteristic dead quality to the voice, and a peculiar expression about the eyes, nose, and mouth. These

conditions are far easier to recognize than describe. The secondary conditions will be mentioned later.

Upper Respiratory Obstruction.—Second in importance only in the category of obstructive lesions of the upper air-passages is chronic enlargement of the faucial tonsil—a condition with which all are probably familiar, and which, therefore, necessitates no detailed description further than to state that while this condition does not at any time greatly influence the capacity of the respiratory passages, nevertheless, it is an important factor in the production of respiratory and dental disturbances, through its effect upon

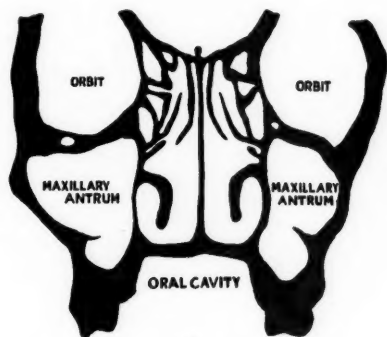


Fig. 3.

Diagrammatic coronal section through head in the region of the first molar, showing nasal septum, uncinate process, inferior meatus, inferior turbinates, middle ethmoidal cells, middle turbinates and hiatus semilunaris.

muscular action directly, and also on account of secondary disturbances.

None the less important, even if less frequent, are septal and turbinal anomalies, which include deflection of, and spur formations from, the septum (Figs. 3 and 4), irregularities, hypertrophies, and cyst formations of the turbinal bones. (Figs. 5 and 6.) More rarely are encountered polypi and benign neoplasms of this region (Fig. 7); undue forward projection of the vertebral column; paralysis of the soft palate and fauces, and diminutive choanæ and nostrils.

Having briefly refreshed your memories upon these anatomic and pathologic relations, let us now consider for a moment the effect of these several conditions upon the health of the individual.

From the viewpoint of the secondary and oftentimes permanent disturbances induced by them, it matters little which single obstructive lesion or combination of lesions exist, since these manifestations are practically identical for any or all of them. The gravity of the situation depends largely upon the extent of the involvement, and the degree of interference with proper nasal respiration.

McKerrison considers nasal obstruction an important factor in the production of chronic middle-ear disease, and reports a series of patients with adenoids who showed diminution in hearing in over seventy-five per cent of the cases. Another authority states that over seventy-five per cent of catarrhal deafness is due to dis-

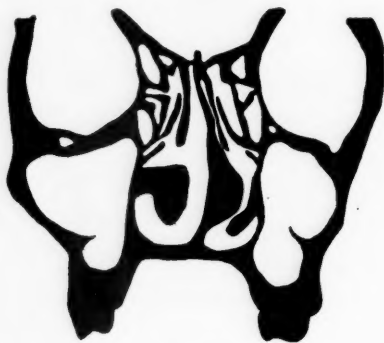


Fig. 4.

Hypertrophy of right inferior turbinal, also deflected septum and spur. (Compare with Fig. 3.)

ease of the nose or throat which interferes directly or indirectly with the ear function.

The frequent coincidence, and probable interdependence, of chronic inflammatory conditions of the nose and throat and gastric disorders has been noted by Solenberger and others.

Interference with proper nasal respiration mechanically prevents the inspired air from being moistened, filtered, and warmed during its passage through the nose, and consequently cold air, dust, and bacteria, contrary to the plan of nature, reach the delicate lung tissue. The result is chronic irritation, with consequent greater susceptibility to pulmonic affections, viz., bronchitis, pneumonia, or phthisis. Moeller and Rappaport cite one hundred and twenty

cases of pulmonary tuberculosis, of whom eight-four per cent previously suffered from chronic nasal disease.

Clinical Manifestations.—No less important are those conditions which gradually develop in the presence of these obstructions, and which arise on account of general weakness and lack of vital resistance caused by an insufficient interchange of oxygen and carbon dioxide.

The result of this state of affairs is seen in the retarded physical and mental development of many of these patients. Mental backwardness is evinced by inability to keep up with studies in school; distaste for the games and play of children of like age; over-sen-

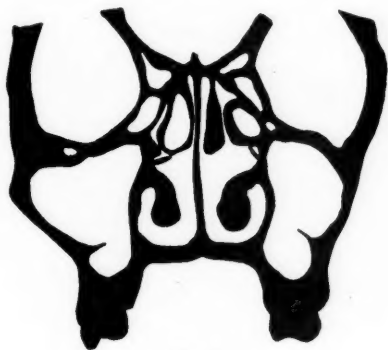


Fig. 5.

Cystic middle turbinal, hypertrophied inferior turbinals, enlarged middle ethmoidal cells, and hypertrophied middle turbinal.
(Compare with Fig. 3.)

sitiveness to reflex irritation, shown by frequent disturbances of digestion during teething; general irritability and peevishness, and later on by the type of profound reflex disturbances peculiar to the period of puberty.

Because of frequent beginning deafness, these children seem listless and inattentive, and are frequently slow in gaining the power of speech.

From an anatomic standpoint, short stature, poor lung capacity, emaciation, and in many cases the characteristic deformity known as "chicken-breast," are among the common evidences of obstructive disease.

Locally, besides the characteristic facial expression above alluded

to, we note a great variety of irregular conditions of the teeth and jaws. The respiratory obstructions are often responsible for the so-called "open bite," malocclusion characterized by lateral contraction of one or both jaws, recession of the mandible, and lack of anterior occlusion.

This brief outline of some of the more important pathologic conditions resulting from upper respiratory obstruction will suffice to show the vital importance of early and accurate diagnosis, followed without delay by adequate treatment. By this means only can the



Fig. 6.
Hypertrophied posterior end of inferior turbinal. (Compare with Fig. 1.)



Fig. 7.
Nasal polypi. (Compare with Fig. 1.)

progress of the condition be arrested, and the secondary and frequently permanent disturbances and deformities prevented.

Does the responsibility of diagnosis and advice regarding the treatment of these lesions rest with the medical men alone? Surely not! I think it safe to say that the dentist probably sees more of these cases in their incipiency than does the general practitioner of medicine, and, therefore, that a proper and adequate conception of these conditions as outlined should be required of every licensed practitioner, in order that he may not, through ignorance or oversight, condemn these little patients to the lasting handicap of a per-

manently lowered vitality and a weakened constitution, with all that such a calamity implies.

The acquirement of a working knowledge of the signs and symptoms of chronic upper respiratory disease is within the reach and comprehension of anyone who is willing to devote a little time to special study.

The possession of even a few facts, and the ability to recognize these conditions through a knowledge of their salient symptoms, such as mouth-breathing, snoring, beginning deafness, delayed speech, frequent colds, etc., would be a continual source of satisfaction to the conscientious practitioner, increasing his measure of success, and above all, by increasing his power to combat and prevent disease, would assist in the development of a sturdier and healthier set of men and women in the coming generation.

In the brief scope of this paper I have been able to touch upon but one phase of the relation of dentistry to the great army of disease-fighters who are steadily advancing toward that goal of all physicians—the prevention of disease.

In closing, I can but repeat that now, as never before, does the burden of responsibility rest with the profession of dentistry. The dentist is the guardian of the great portal of entry to the human economy. Through the mouth, or in close relation to it, passes not only all the pabulum, but also the very air that sustains life. The oral cavity is also in very close relation to many vital structures—its health affecting their health.

It is to the dentist that the medical profession now looks, not only for the prevention, but also for the cure, of many digestive disturbances which have their origin in imperfect mastication or in abnormal fermentation arising from septic mouths with dead and decaying teeth.

It is also your privilege to become members and active agents in the National Society for the Study and Prevention of Tuberculosis, whose crusade against the great white plague is now attracting world-wide attention.

A clean oral cavity free from irregularity or disease, and proper and adequate nasal respiration, are both of vital importance in the development of a sound and healthy mind and body.

Consider well these facts and your relations to the medical pro-

fession. You also are guardians of the public health. In all your professional relations, particularly with children, be on the alert for these conditions, especially for that greatest enemy of childhood, upper respiratory obstruction—adenoids and hypertrophied tonsils.—*Dental Cosmos*.

ARRANGEMENT AND OCCLUSION OF ARTIFICIAL TEETH. By J. H. Prothero, D.D.S., Chicago, Ill. Studies of the movements of the mandible in mastication have established certain facts that are of vital importance to the prosthetist in the construction of artificial dentures. Many in the profession today are familiar with these facts, but fail to profit by or put them to practical use. Others, again, have given this subject but little consideration, principally because its importance and value have never been impressed upon their minds.

Bonwill labored long and earnestly with the profession in encouraging the study of normal occlusion of the natural teeth, and urging the necessity of following nature's methods in the arrangement of artificial teeth. He was a pioneer in this field, and practically worked alone without the sympathy or assistance of anyone for many years; therefore, it is not strange that he should have failed to complete the system in all of its details, nor is it strange that he made some erroneous deductions. The bulk of his work, however, stands as a monument to his memory, which compensates in a small degree for the lack of appreciation of his efforts by the profession while he was living.

I have brought with me a skull in which the full complement of the teeth is present, and which I hope to exhibit at your clinic. One need but to glance at it to appreciate the beauty and utility of arrangement of the organs of mastication. A close study of this particular specimen will, I am sure, inspire in the minds of those who examine it a desire for greater light, and prove an incentive to higher, larger and broader efforts in the field of prosthesis. From its examination one can also readily understand why Bonwill, who examined thousands of such specimens in his research work, became the enthusiast that he was.

Within the last decade a few men have taken up the work where Bonwill laid it down, with the result that more accurate occluding

frames have been devised, appliances for recording the normal movement of the mandible have been invented, and new terms and expressive phrases have been introduced for simplifying the study and carrying out more accurately the practical details of this subject.

The lower jaw, on account of its peculiar attachment to the base of the cranium, and of the direction traversed by the muscles controlling it, is capable of a great variety of movements. Mastication, however, is accomplished by the jaw movements being carried out along certain definite lines. There is no haphazard "catch-as-catch-can" condition prevailing. Every movement is for a purpose and is carried out with almost mathematical precision.

The facts I wish to present will be rendered clearer by giving a brief description of the movements of the lower jaw in the act of masticating food on one side of the mouth. We will suppose the food has been introduced into the mouth and carried between the upper and lower teeth on the left side by the tongue. The right side of the mandible is then drawn forward and downward a short distance, the condyle passing onto the eminentia articularis, and following what is known as the "condyle path," while the other condyle is slightly rotated, but remains practically at rest in the glenoid fossa, thus becoming the pivotal point around which the mandible rotates. This movement brings the marginal ridges of the buccal cusps of the lower bicuspid and molars on the pivotal or working side of the mouth in alignment with the buccal cusps and marginal ridges of the corresponding upper teeth, while their lingual marginal ridges occupy a similar relation to the corresponding upper teeth and surfaces. The distance traversed by the buccal marginal ridges of the lower teeth in passing from normal occlusion in the central grooves to the buccal marginal ridges of the uppers in partial occlusion is most expressively termed the "differential" by Dr. T. W. Pritchett.

This differential movement brings the teeth in such relation as to form a long rectangular groove extending from the third molars to the first bicuspid, into which the food is forced and prevented from lateral displacement by the tongue and cheek muscles. On the opposite or projected side the buccal cusps of the lower third molar engage with the lingual cusps of the upper second or third molar, and sometimes both, depending upon the mesiodistal relationship of the teeth in the two arches. Anterior to this contact, the other molars and bicuspid are not in occlusion, and consequently

are not in correct relation to masticate food. The lower incisors are usually in contact with the upper incisors between the central and cuspid on the working side of the mouth.

It will, therefore, be seen that contact of the lower with the upper teeth is secured at three widely divergent points, triangularly located, and hence the term, "three-point contact," has been applied to both natural teeth and artificial substitutes exhibiting such contact. This term expresses a condition that should be present in either natural or artificial dentures in order to insure the most effective results in mastication, and prevent the tipping of dentures and the jaw under stress. Under normal conditions, the simple opening and closing, or hinge-like movement, is only employed when lateral motion is not possible, or when food of the softest variety is being triturated, and is not nearly so effective as the lateral movement.

When the upper anterior teeth over-bite the lowers, the bicusps and molars are arranged so that their general occlusal surfaces present a curved line, with convexity downward, more or less prominent, depending on the depth of over-bite. This line if projected backward passes just anterior to or through the condyle. The center of this curve lies in the region of the upper anterior margin of the orbit under normal conditions, and correspondingly higher as the arrangement approaches a plane. This curve has been called the "compensating curve," or "curve of Spee," so named from the man who first described it. The inclination downward and forward of the condyle path coincides with this curve and varies from a horizontal plane to an angle of 45 degrees, the average being about 25 degrees.

Occasionally in the same individual there is a difference in the angles of inclination taken by each condyle. This curved arrangement is a provision of nature to preserve contact of the teeth at various points in the arches, by compensating for the dropping down of the condylar processes as they move forward on the eminentia articularis. The lower third molars, which are placed in a higher position in the curve, when brought forward come in contact with the upper second molars, which are placed correspondingly lower. At the same time the incisal edges of the lower anterior teeth are carried downward and forward, and usually come in contact with the corresponding upper teeth and surfaces, although contact in this location is not an absolute necessity, thus equalizing the force ex-

erted by the muscles of mastication, and enabling them to exert their maximum effort. An effort will now be made to describe a few of the many important details to be observed in arranging artificial teeth as near to nature's methods as possible.

The mission of the prosthetist in replacing the lost natural teeth by artificial means is two-fold; first, to restore the function of mastication, and second, to meet esthetic requirements. In order to arrange and occlude artificial teeth correctly an occluding frame must be used which is capable of reproducing the masticatory movements of the human jaw. A number of good appliances fulfilling such requirements more or less accurately are now procurable, some of which are decided improvements on the Bonwill. The second adjunct is an appliance for measuring the relation of the alveolar planes to the condyles, while the bite plates are in position in the mouth, and of sustaining them in this relation to the hinge of the occluding frame while the models are being fixed. The face bow fulfills these requirements efficiently. Some means of registering the inclination of the condyle path is also necessary. A method outlined by Christiansen and an appliance suggested by Dr. Snow can be applied with fairly satisfactory results for accomplishing this step.

The proper appliances at hand, the steps of construction of a full upper and lower denture are as follows:

The models having been secured, a rigid unyielding baseplate is conformed to each and trimmed to correct peripheral outline. Borders of wax are built up to correspond in length to the natural teeth and absorbed tissue. This can only be done approximately at this time. The wax rims should be trimmed nearly flat occlusally, the outer buccal margins of the lower being slightly higher than the lingual to correspond with the buccolingual inclination of the occlusal surfaces of the teeth, while the upper rims are trimmed correspondingly. The labial and buccal surfaces of the wax rims should be built out to represent such restoration as may be deemed necessary. When this has been accomplished the baseplates are introduced into the mouth. The length of the upper rim of wax is determined by the length and position of the lip and should show about 1.5 millimeters below the lip when the latter is at rest and facial contour restored. The length or height of the lower wax rim is determined after the length of the upper rim has been secured by noting the

position of the lower lip when closed, and the external orbicular contour. Too long a rim is indicated by the effort on the part of the patient necessary to obtain contact of the lower, with the upper lip. A rim deficient in height is indicated by the lower lip being crowded down and consequently shortened, resulting in a disturbance of the general facial contour.

If absorption of tissue in both upper and lower arch has been uniform, the line of contact of the two rims should be about midway between the upper and lower borders. Where but slight absorption has occurred the wax rims will represent a thickness but little greater than the length of the crowns of the natural teeth. The facial contour should be noted and wax added to or trimmed from the rims as esthetic conditions indicate. Usually, it is necessary to build out the cuspid eminence to a considerable extent in order to obliterate the wrinkle which extends from the alae of the nose over the angle of the mouth in those cases where loss of tissue is marked.

Care should be taken to see that uniform contact of the wax rims throughout is secured while the baseplates rest solidly upon their respective borders. This is tested by having the patient close the mouth firmly; then, with a thin, flat instrument inserted between the rims in the region of the second bicuspid or first molar, attempt to pry them apart. If they do not yield at this point, repeat the step on the opposite side.

Should the baseplates separate on either side, the other side remaining in contact, or on both sides while contact is maintained in the anterior portion, more wax should be added to the deficient rim until uniform contact is secured anteriorly and on both sides at the same time. Failure to correct this error would result in the teeth on the deficient side failing to occlude.

The high lip line should be marked, which will give some idea as to the length of tooth to use to avoid the exposure of a large area of artificial gum material, and yet allow a reasonable amount to show in laughing. The median line should be marked on the baseplates at this time. One of the best methods of doing this is to place a straight edge along the median line of the face, striking an average between the point of the chin, the philtrum, and a point midway between the inner termination of the eyebrows. The result will be harmonious, and as a general rule more accurate than if the *frenum labæ* is taken as a guide.

The upper baseplate is now removed and the stem of the face-bow heated and forced into the wax rim two or three millimeters from the incisal plane. Having been forced deeply into the wax it can be removed to facilitate the carrying out of subsequent steps and replaced in position later when the baseplate is in situ.

The next step is to secure the correct or normal relation of the lower to the upper jaw. The method about to be described has been followed by the writer for a number of years with uniformly accurate results.

Both baseplates being in position, the patient is instructed to relax the muscles of the jaw so that the operator may open and close the mandible at will. The tips of the fingers are then placed on the point of the chin, moderate but not excessive pressure upward and backward exerted, and the mouth opened and closed several times, pressure as indicated being maintained at all times. The fingers of the other hand are employed to hold the lips apart and careful attention given to the striking of the wax rims together. It will frequently be noticed that they do not at first strike uniformly in the same place, but after a number of trials with maintained pressure on the point of the chin, the correct position will be found. Excessive pressure on the chin will compress the tissues in the glenoid fossa and result in backward displacement of the mandible.

When the normal closure is established, the baseplates being in contact and pressure being still exerted on the chin, the patient is instructed to "keep the lower jaw closed." This is readily done without any tendency to disturb the secured relation. Two four-pointed staples should be at hand which can now be forced into the wax rims to hold the baseplates firmly together. The stem of the face-bow is now inserted into the upper baseplate in the opening previously made for it, care being taken to see that it is firmly imbedded in the wax and immovable. The face-bow is then placed in position, the center clamp passing over the stem projecting from the baseplate, and the side rods carried to a point about 12 millimeters in front of the external opening of the ears, and on a horizontal plane with it. They are then pressed firmly against the sides of the face and the clamp nuts tightened. Care should be taken to see that the face-bow is evenly balanced before tightening the clamp nuts. This can be done by slipping the bow sideways on the rods,

as indications require, until the same number of graduations show on each rod between the face-bow and face.

The clamp nut on the stem is next tightened firmly, when the baseplates are ready for removal. This is accomplished by loosening the side clamp nuts and drawing out the rods. The patient is then instructed to open the mouth and the baseplates are removed by grasping the rods attached to the upper plate. Reasonable care should be observed to prevent the relationship of the two baseplates and that of the face-bow with the upper plate from being disturbed.

Mounting the models on the occluding frame is the next step. The side rods of the face-bow are pushed inward to their limit, and the clamp nuts tightened. This brings their inner ends, in which there is a slight depression, in proper relation to receive the projecting lugs of the frame hinge. The upper bow of the frame is thrown open, the face-bow adjusted in position, the upper model placed in position in its baseplate, and the bow dropped back to position again. It might be well to secure the model to the baseplate with a little hot wax to insure stability while being attached to the frame. Plaster is now mixed and applied to the model, and around the bow as usual, to hold it in place.

The entire frame, with face-bow, baseplates and upper model, is now inverted, the lower bow of the frame thrown back, the lower model placed in position in its baseplate, the bow dropped down upon it, and the model attached as usual. When the plaster is firmly set, the face-bow can be removed from the frame and baseplates.

The models now occupy such a position upon the occluding frame that their occlusal planes bear the same relation to the hinge that the natural alveolar planes bear to the condyles. This relation is not procurable in any other way known to the writer than by means of the face-bow mentioned.

One other step of importance remains to be carried out before proceeding to arrange the teeth. This consists in registering the inclination of the condyle path and setting the hinge slot of the occluding frame at a corresponding inclination. The staples are removed from the baseplates, and on either side of the lower baseplate on the occlusal surface, near the distal termination, is placed a small U-shaped appliance having a projecting tapering pin. The "U" por-

tion is pressed into the wax, leaving the pin projecting above the occlusal plane.

The baseplates are now inserted in the mouth and the patient instructed to project the jaw forward and then return it to normal position. This may be done a number of times before final attachment of the two plates, to insure against lateral motion. When the patient can move the mandible evenly forward, he is instructed to close while the jaw is projected. The baseplates, instead of being in normal position, will usually be separated at their distal extremity, relation being maintained by the projecting pins, which have passed upward into the opposite baseplate. The lower plate will also be considerably advanced beyond the upper. The incisal rims of wax, however, should be in contact.

On removal, the baseplates are returned to the lower model on the frame, the hubs of the hinge slots released, and the spring controlling the lateral movement of the frame thrown off its attachment. This releases the upper portion of the frame so that the upper model can be moved up or down, forward, backward or sideways without restriction. It may now be placed in the upper baseplate, and its correct position found. This adjustment, it will be found, will cause the hinge slots to assume approximately the same angle or inclination as the condyle path, in which position they are permanently fixed by tightening their respective clamp nuts. The baseplates are separated, the U-shaped appliances removed, and the hinge spring thrown into action, which brings the baseplates back to their original relation as when first mounted on the frame. As before stated, however, when lateral motion is produced, the lower bow of the frame is carried downward and forward at approximately the same inclination as that of the natural jaw.

The frame should now be subjected to the lateral motion and the occlusal planes of the wax rims modified so as to remain in contact in the lateral motion, as well as in normal occlusion. This modification, it will be found, will usually necessitate the curving upward of the occlusal planes, the amount of curvature depending on the angular inclination of the condyle path.

Teeth of good form appropriate to the requirements of the patient should be selected. The molars and bicuspid should be as nearly normal in their buccolingual diameter as is possible, to secure a good working differential in mastication.

The principal object in the grinding of teeth, and which should never be lost sight of, is to so modify their occlusal forms as to increase the contact area of those surfaces involved in mastication to the greatest possible extent. In other words, it is the developing of surfaces from what would otherwise be mere contact points in the teeth as supplied by the manufacturers.

With a little experience and skill, the development of correct occlusal areas on bicuspid and molars can be accomplished without marring appreciably their general outline form, thus rendering them capable of food reduction with minimum effort.

As a general rule, the central groove should be deepened somewhat and broadened materially. This treatment not only reduces the mesial and distal marginal ridges, which usually are too prominent, but it reduces the lingual inclination of the buccal and the buccal inclination of the lingual cusps, which are too rounded and tubercular in form, to broad planes so necessary for accomplishing the desired results.

The modifications just mentioned may be made before beginning the arrangement of the teeth, and when properly carried out the teeth will need only occasional touches here and there in the final adjustment. These preliminary steps having been carried out, the teeth are ready for arrangement.

Since the facial contour was restored by carving the labial and buccal surfaces of the wax rims, the teeth should be arranged progressively in such manner as to take their proper alignment without destroying any more of the contoured surfaces than is necessary. A section of wax adjoining the median line on the upper baseplate is removed from the rim, of sufficient length and depth to admit one of the central incisors. This is placed in proper alignment labially and incisally, and firmly attached by melting the wax lingually. Another section large enough to admit the adjoining lateral is then removed and this tooth dropped into position, the tooth already fixed and the adjoining margin of the wax to the distal serving as a guide in securing the correct labial alignment. The cuspid, and then the three opposite anterior teeth, are similarly adjusted, then the bicuspid and molars, the occlusal surfaces of which are arranged to correspond to the compensating curve previously developed in the wax rims.

Two methods are in vogue for arranging the lower teeth. First,

the second bicuspid are set in position to occlude with their opposite fellows, the teeth anteriorly and posteriorly being arranged from this fixed point.

The second method, and the one recommended by the writer, is to arrange the six anterior teeth first, allowing the upper incisors to overbite the lowers slightly, and when the first bicuspid is reached, correct the disproportion in width as far as possible between the uppers and lowers by grinding the proximating surfaces of the cuspid and bicuspid. This method usually requires less modification of the anterior teeth than the one first mentioned. As a rule, disproportion in the relative mesiodistal diameters of the lower bicuspid and molars, compared with the uppers, nearly always exists. In such cases the larger teeth should always be reduced by grinding on their mesial or distal surfaces or exchanged for a set of proper proportion, which, however, can seldom be done with exactness. The mesial and distal planes of the various cusps are modified as conditions require, so as to secure positive contact with the corresponding planes of the opposing teeth.

Beginning with the placing of the first lower tooth, the frame should be moved from side to side to test the correctness of the position of each tooth placed, and modified, or its opponent modified, as conditions require. Further remarks along this line are unnecessary. To those who have never attempted a case of anatomic occlusion, I can say that if you will undertake one with a careful determination to succeed, you will learn more from that one case than can be derived from a paper ten times more explicit than this.

As one gains experience, enthusiasm grows, and a class of procedure shunned by some and a bugbear to many more, because of unsatisfactory results, becomes a pleasure.

Let me quote a paragraph from an unpublished paper by Dr. T. W. Pritchett, to whom I owe much for many hints in this field: "There is fascination in the thought when edentulous persons, helpless as to the function their lost organs perform, present for our service, we can, in a measure, by our art restore the lost function and make them presentable to their friends again. The romance comes in when we succeed beyond our and their expectations."

My friend Pritchett succeeds, and so do many more whom I could name, and so can everyone who makes the effort. It is the

only way. Get into the front rank and help the work along by doing it yourself and helping the other fellow. If all would put their shoulder to the wheel and follow nature's methods, the plain line articulator and barn-door hinge would be relegated to the scrap heap, where they should have been cast years ago.—*Dental Summary*.

HYPERSENSITIVE DENTIN. By H. B. Tileston, M.D., D.D.S., Louisville, Ky. Dentin, in its normal state, protected by an unbroken covering of enamel, is said to be only slightly sensitive, a statement based wholly upon theory, since its truth cannot be tested unless the enamel is penetrated, when the conditions are at once changed.

As proof of the contention that dentin is not sensitive until it has been for some time deprived of its normal protection, it is pointed out that fractured teeth are not immediately sensitive.

The lack of sensitiveness of dentin in fractured teeth, however, may be attributed to temporary paralysis of the pulp from the shock of the blow that produced the fracture, sensitiveness returning when the pulp recovers from the shock. It is noted that in grinding vital teeth to prepare them for telescoping crowns, sensitiveness of the dentin is excruciatingly apparent immediately that the enamel is passed and the grindstone impinges upon the dentin. In such cases there is no time for pathologic changes to take place, which would account for the sensitiveness of the dentin. It would appear, therefore, that dentin in its normal state is sensitive, varying in degree in different individuals just as individuals themselves vary in their susceptibility to painful impressions.

Hypersensitive Dentin.—But there is a condition known as hypersensitiveness of dentin, or a state of exalted sensitiveness, which occurs in the presence of caries and which frequently embarrasses the dental surgeon in the preparation of cavities for fillings, a condition that has long been recognized as the *bete noire* of operative dentistry, but never fully understood as to its etiology.

The presence of nerve fibrils in the dentinal tubules would account definitely for the sensitiveness of that tissue, and doubtless an efficient specific remedy would long since have been found applicable to all cases alike. But nerve fibrils have never been demonstrated satisfactorily in dentin, and as a consequence numerous theo-

ries have been advanced to explain its sensitiveness, and remedies almost without number have been suggested, based upon one theory or another, none of which are efficient in all cases, and many seem to be successful in no cases.

Pressure Anesthesia.—Remedies which, by means of pressure, act directly upon the pulp of the tooth with more or less profundity, are usually efficient as obtundents of hypersensitive dentin, but the unknown and consequently uncertain extent to which they may affect the pulp makes such methods dangerous to use. To this class belongs the use of cocain hydrochlorid solutions forced through the dentinal tubules into the pulp, either by means of cataphoresis or the high-pressure syringes recently introduced. If it were possible to definitely limit the penetration of the cocain with either instrument to the dentin alone, there could be no objection to their use. Cataphoresis being slow in its action, and hence more under the control of the careful operator, might be safely used in the majority of cases, but the apparatus is cumbersome and the paraphernalia surrounding the patient is somewhat disturbing to one of a nervous temperament, and the time required to anesthetize the pulp is prohibitive, for which reasons this method has become practically obsolete.

High-Pressure Syringe.—The high-pressure syringe in vogue in recent years with many operators acts with a power and suddenness that precludes intelligent control, and as teeth vary greatly in their histologic structure, some having tubules of large caliber and direct communication with the pulp, it is quite likely that in many instances the effect produced upon the pulp would prove fatal to that organ.

In all probability, neither of these methods obtunds hypersensitive dentin, except as the pulp is more or less profoundly anesthetized, and Dr. J. P. Buckley very properly says that "we are never justified in completely anesthetizing the pulp of a tooth for the purpose of painlessly preparing a cavity therein."

General Anesthetics.—The employment of a general anesthetic such as chloroform, nitrous oxid gas, somnoform, etc., or of general anodynes, such as opium, the bromids, etc., for the purpose of painlessly preparing cavities in teeth, is justifiable in such rare instances as to be practically removed from the list of remedies for hypersensitive dentin.

Local Applications.—Due consideration, then, for the safety of

the tooth pulp and of the patient reduces us to the employment of such remedies or means of obtunding hypersensitive dentin as are applicable directly to the tissue to be operated upon and confined in their action to the dentin alone.

In the theoretical absence of nerve fibrils in the tubules, the employment of the alkaloid cocain, which acts so promptly upon sensation in soft tissues, is absolutely without effect when applied to dentin without pressure. When pressure is applied, however, gently, if continued long enough to affect the dentin, it does so through its effect upon the pulp. Cocain solutions or the oleate of cocain, 5 per cent, as suggested by Dr. Buckley, confined under a temporary filling for several days, or a cocain solution under pressure of a pellet of soft rubber placed over it in a cavity, if successful at all, are so, not by any anesthetic effect upon the contents of the tubules, but by conveyance through the tubules to the pulp itself. The anesthetic effect upon the pulp by such procedures, not being profound, would not be likely to be followed by unfortunate results.

Three Ways of Obtunding Sensitive Dentin.—Assuming the contents of the tubules to be a fluid, unaccompanied by nerve fibrils, through which fluid, by means not understood, sensation is conveyed to the pulp, there appear to be three ways by which we may hope to obtund hypersensitive dentin, viz.:

First, by forcing the contents of the tubules back into them and towards the pulp.

Second, by destroying or disorganizing the contents of the tubules for a short distance within them by powerful escharotics or caustics, or,

Third, by means of desiccation withdrawing the fluid for a short distance within the mouths of the tubules. In each instance, it will be observed, the telegraphic communication between the surface of the dentin to be operated upon and the pulp, is interrupted.

Escharotics.—Remedies having a cauterizing or escharotic effect upon the contents of the tubules are apt to be so irritating as to cause considerable pain when first applied. Fairly good results may be obtained in many cases of shallow cavities, notably those occurring at the gingival of labial and buccal surfaces, by the use of equal parts by weight of phenol and potassium hydrate. This preparation was introduced some years ago and known as Robinson's

remedy, originated by Dr. Jerry Robinson, chiefly as a remedy for Rigg's disease, as pyorrhea alveolaris was then called.

It is quite painful when first applied, but the pain is of a character that is more readily tolerated by most patients than the pain of cutting the dentin, and soon passes away. The desensitizing is seldom complete, but the suffering is brought within the bounds of toleration for patients who could not endure the touch of an instrument before its employment. If used in deep cavities it is apt to produce prolonged odontalgia.

Zinc Oxychlorid.—A thin mixture of zinc oxychlorid spread in small quantity upon the cavity walls and sealed in with cement for twenty-four to forty-eight hours, will completely desensitize hypersensitive dentin. The zinc chlorid coagulates the albumen in the mouths of the tubules, and also because of its affinity for water, withdraws some of the fluid from them. It is not safe to use this mixture in deep cavities.

There are other powerful caustics that are sometimes recommended as remedies for hypersensitive dentin, such as trichloroacetic, chromic, sulphuric and nitric acids, and arsenic trioxid, which are effective, but too irritating to the pulp and dangerous to its vitality to be considered as proper agents to be employed for the purpose.

Desiccation.—Perhaps the simplest, safest and most widely-applicable remedy for hypersensitive dentin, and the one that gives the most immediate and satisfactory results, is desiccation of the dentin to be operated upon by means of a stream of warm air, aided in some instances by the use of some volatile material having an affinity for water, such as absolute alcohol. By this means the mouths of the tubules are emptied of the fluid that conveys impressions to the pulp, and if the injection of the warm air is continued long enough to dry out the tubules to considerable depth, the obtunding effect is quite marked. The continuous flow of compressed air gives better results than the intermittent puffs from a hot-air syringe. The rubberdam should, of course, be used in every instance so that complete dryness can be maintained throughout the operation of cavity preparation.

Refrigeration.—Refrigeration by means of the ether, ethyl chlorid or bromid spray is an effective means of obtunding hypersensitive dentin, but it doubtless owes its analgesic effect to the benumbing in-

fluence of the extreme cold upon the pulp itself, which is apt to be followed by active hyperemia, congestion, pulpitis and death of the pulp as sequelæ.

Sharp Excavators.—Fortunately for the dentist, the large majority of cases operated upon are not hypersensitive to such a degree as to demand the employment of any of the obtunding methods mentioned herein.

Mild sensitiveness, and even some exalted cases, may be managed successfully by the use of sharp excavators and smooth-running, keen burs, manipulated with a steady, firm hand and definite and positive procedures, with an air of self-assurance on the part of the operator that inspires the patient with confidence, and the employment of tact to arouse the moral courage, fortitude and intelligent appreciation and assistance of the patient.

Temperaments.—The observation of temperaments and the adjustment of the attitude of the operator to the temperamental peculiarities of the patient, either with children or adults, sometimes sympathetic and indulgent, sometimes positive, and at other times severe, as the case demands, frequently bring success out of what appears at first to be doomed to utter failure.

Neurasthenics.—The most difficult and often hopeless cases are those who are suffering from neurasthenia, and practically incapable of exerting any nerve force or self-control, and those who are so consumed with dread of a supposed fearful ordeal that they shrink even from the approach of an instrument, and cannot muster courage enough to find out whether they are going to be hurt or not.

In such cases it is only possible to resort to the most temporary expedients, awaiting a time when more favorable conditions may prevail.—*Dental Summary.*

IMPRESSIONS AND MODELS FOR RUBBER PLATES.

By C. L. Smith, D.D.S., St. Charles, Ill. One of the first and most important steps in the making of a successful denture is to get a perfect impression of that part of the mouth you wish to cover.

Probably no two dentists would proceed in exactly the same way, but the final result in most cases would be the same. I think it is generally conceded that plaster is the only wholly reliable material to use, although one of the most successful plate workers

I ever knew never used anything but plain yellow beeswax for all impressions. Others use modeling compound and some a combination of plaster and wax or modeling compound. It is the method and material that you are most successful with that you should use.

I select an impression tray large enough to leave at least one-quarter of an inch space between the rim and the gum. In case of a high arch, build up the palatal portion with wax to about the same distance in front and almost touching the mouth in the back, but never building up the sides of tray.

Placing a small amount of salt in warm water, I slowly sift the plaster into the porcelain mixing bowl until just a small amount of dry plaster remains on top, then pour off excess of water and stir a very little.

With the patient sitting in an upright position, place desired amount of plaster in tray and insert in mouth with right hand, raising heel to place first and gradually adjusting the front. Just as plaster begins to stiffen, change hands and holding tray firmly to place with the left hand, using the right forefinger to pull the cheek out all around as far as possible to smooth out the folds that might be caught in plaster, then forming a half circle with the thumb and fingers place firmly on the cheek opposite the top of tray to force plaster as high as possible and also tight to the gums. This, to me, is much more satisfactory than to build up the outside of tray with wax, and the close pressure obviates the necessity of any scraping on the outside of the model.

The lower is taken in the same manner, and when I begin to apply pressure on the cheek, I have the patient raise the tongue to the roof of the mouth so the impression will not go down too far and impinge on the muscles in the floor of the mouth.

The taking of partial impressions is simplified by making a core for the places where teeth have tipped together. To do this, I use a piece of sheet lead cut to the right size for a tray and with a small amount of plaster or hard modeling compound take an impression of the undercut, removing lead, trimming core to right size and shape, slightly oiling it and the adjoining teeth and proceed as for a full case, except I oil the tray so it can be removed and the buccal part of the impression broken in as few pieces as

possible; the lingual coming away in one piece. The core is then taken out and, with the pieces, adjusted in tray and waxed together. The mouth is now carefully examined and impression scraped to correspond to the hard places or where plate will need relief, which is usually a small strip along the center of the roof, never changing the lower impression in the least. Before scraping, I pick into the impression with a knife as deep as I want to remove and then just smooth it.

After coloring and applying separating material, it is ready to fill with as stiff plaster as will shake down easily, and placing of small wire brads in sharp ridges or lone or long teeth will prevent many broken models in separating. I do not turn it upside down on glass or paper, but build up as wanted and put in a level position. I cannot give a good reason for this, only it seems to give a more dense surface to the model.

After the teeth have been tried in and the length of plate decided on, the model is slightly beveled at the back to make the plate fit tighter at the heel. This is the only preparing the model gets. I never use a model over twenty-four hours old and prefer to vulcanize the same day the impression is taken.

Now I expect criticism on this paper, and I hope I will learn something. The discussion will probably be worth more than the paper, provided you disagree with me.—*Dental Review*.

"SILK VERSUS CALICO." By N. S. Hoff, D.D.S., Ann Arbor, Mich. At the recent meeting of the Ohio State Dental Society a paper was read under the above title. It was humorously stated and largely discussed in the same manner, and yet it called up a most interesting and serious problem which the profession has been compelled to consider throughout its history, and one which will probably not be settled satisfactorily by this discussion, or in the near future. The question raised, in brief, was whether an honorable or ethical practitioner was justified in dispensing an inferior service to one who could not pay what he considered a fair recompense for his service, and was justified in exacting a larger fee for a better service from such as could afford to pay. As the matter was put, it was "*calico for the poor and silk for the rich*." On one side it was maintained that plastic fillings meet the

needs of the poor and do not encroach unreasonably on the time and opportunity of the dentist; while gold fillings and inlays are within the means of the well-to-do class, and afford fitter recompense to the dentist, and exact a higher order of skill, therefore, more to be desired and cultivated.

Every question of this sort has a moral precedent, and should be judged only upon that basis. It is the so-called practical factor that makes all the confusion and difficulty in adjusting such problems. The moral basis is unquestionably the right one, but unfortunately it will not pay rent, or buy automobiles. Dentistry is undoubtedly a beneficent profession, but as yet it can lay no large claim to being a philanthropic calling. We all feel kindly toward the unfortunate, and no dentist would hesitate to relieve any person, however destitute, from suffering, and at considerable cost; but it would be suicidal for him to give largely of his time and strength to such deserving charity, unless he had some other adequate means of support. As the greatest number of practitioners are dependent themselves upon their professional resources for their daily bread, it is evident that no great amount of charitable work can be indulged in, however benevolently inclined one may be. This problem is being worked out by the medical profession through the "out-door dispensaries" for the very poor, and public hospitals for such as may not be able to command the services of the regular practitioners. In some places the public dental clinic is being utilized to take care of these patients to some extent at least. But it will be a long time before the public authorities will provide generally adequate facilities for dental services of this character.

It is said that a French prime minister once called an eminent surgeon to treat him, and remarked to the surgeon that he wanted his most skilful treatment, and not such as he was accustomed to deal out to the unfortunates whom he served in the public hospitals. The eminent surgeon replied that to him every patient he served was a prime minister. This undoubtedly should be our attitude toward all who seek our aid, and it may come to pass in the good time that is coming, and perhaps it should be our greatest ambition to strive to bring on such a beneficent condition by resolving that "all coons shall look alike to us."

We once visited a very skilful dentist who took us into his laboratory to show us a very fine piece of bridgework that he was preparing for the mouth of a wealthy railroad president. We admired the work very much, as it was very skilfully devised and constructed. The dentist informed us that he originally expected to charge \$350 for the work, but as the patient was able to pay, and wanted the best service he could give him, he had, as he put more work and thought into the work, gradually worked his fee up to \$700. We felt that in so doing under the circumstances he was perfectly justified in increasing the fee he would charge because he was actually putting the value into the service. But to our disgust, he informed us that his wife had just been in, and had plead with him for \$50, which she wanted that she might purchase a fine velvet coat for their little girl, he finally gave it to her, and at the same time mentally agreed that he would add the fifty dollars to his fee for the bridge. We left that office with the feeling that our calling was unworthy of the name of a profession, and that if it was not actually dishonored by this action, it was so closely allied with the bad features of commercialism by a man of high abilities, whom the public was willing to trust, that we blushed for shame, and were filled with indignation that any man should so debase it.

We know another skilful practitioner who believes that a professional man has no moral right to take more of a rich man's money for a similar service than a poor man's. He carries his theory out in practice, and makes all his fees on the basis of so much per hour, and says his patients can make out their own bills as well as he can if they will take the trouble to keep track of the time they are in his chair, as they all know the rate per hour. Such a method, when practicable, has much to commend it, but there is a public responsibility attaching to a service rendered to one individual that does not apply to another, which makes the hour system unfair to the dentist as well as to the patients served. All patients do not make the same demands on one's physical or technical resources, and the responsibility in one case can never be the same as in another. Hence the value of the service cannot be measured by a clock, but should be assessed on an intelligent, as well as a moral basis.

In the average practice it will always be necessary to make discriminations as to the kind of service to render in each case. In one case it may be of the calico order, and in another of the silk; but the quality in either case must be of the professional standard, and be based on an intelligent moral conception of professional duty and dignity; otherwise we shall never deserve the title of a profession, and may degrade our calling to the level of the most depraved commercial practices. There undoubtedly are some in our profession who have never realized the professional code, and others who condemn it outright, and still others who feel called upon to ignore it in order that they may succeed in a business way; but we believe the larger number of dentists realize that they hold an important position of trust, and they are loyally endeavoring to serve the people faithfully and conscientiously. Let us keep up our ideals and standards, and hope for the great day when all shall see that their true happiness and welfare is best secured by a constant loyalty to the highest attainments possible, and with their completest administration to all who require them.—*Dental Register.*

SYPHILIS OF THE MOUTH. By H. J. Wallhauser, M.D. The pathology of syphilis affecting the mucous membrane of the mouth is of the same character as the cutaneous manifestations of this disease, but on account of the difference in anatomic construction the clinical appearance of the lesion formed is different from those appearing as a part of the eruption on the skin.

Apart from the constitutional effects of this disease, the mouth is the next in importance. It is here that we see—in many cases—the earliest lesions, and in late syphilis the most persistent evidences of the disease are here encountered. By carefully observing the buccal mucous membrane we are aided in treatment, as in many cases the disease is continued *here* after all other signs have disappeared and the patient has regained his former healthy physical condition.

From the standpoint of infection, the mouth may be considered of more importance than any other region of the body, since here we have to guard against *direct* infection by contact with the lesion and also the saliva in which the infection may be conveyed and transferred by various utensils—as cups, glasses, knives, forks, etc. In fact, any article coming in contact with the saliva may be the means

of infection; an abrasion of the lips or mucous membrane rendering the person more liable to such infection. When we consider all these facts we must realize how important it becomes to be able to recognize the various *manifestations* of syphilis as it affects the mouth.

The earliest lesion of syphilis is the chancre, which occurs at the point of *contact* with the infection. Next to the *genital region* the mouth is the most common site for the *beginning* of this disease.

On the lips it is a hard, rounded, somewhat raised, superficially ulcerated lesion, with more or less infiltration. The latter causes a protrusion of the lip, which is a very characteristic condition of chancre in this location. It is quite sudden in its onset, and commonly appears at the site of a previous abrasion, as, for example, a *herpes febrilis*, or cracking of the lips. Initial lesion in this location is always accompanied by enlargement of the neighboring lymphatic glands, especially those beneath the lower jaw, causing pain on pressure and, if severe, stiffness of the jaw.

The picture thus formed, consisting usually of a single sore, with raised borders and superficial ulceration, more or less protrusion of the lip, can scarcely be confounded with any other disease. (When multiple lesions are present they are usually situated on opposing surfaces of the lips.)

The only condition that may rise to difficulty and which has been mistaken for primary lesion of syphilis is epithelioma. Here we may have a single hard infiltrated lesion, with superficial ulceration, which, on casual inspection, can scarcely be found to differ from chancre. The main diagnostic feature is the method of its appearance and development. Epithelioma is of slow growth, usually beginning as a roughened scaly lesion, which gradually infiltrates and enlarges. In advancing to the size of a chancre, or dime-sized, it requires between six months and a year. This history is so different from the sudden onset of the initial lesion of syphilis that a mistake can be made only by carelessness if this fact is borne in mind. Furthermore, while the lymphatic glands may be enlarged in epithelioma, it is of late occurrence.

Other locations which may be the seat of the primary lesion are the tongue, gingiva labial fold, gums, soft palate and mucous membrane of the cheeks. These various locations are affected in point of frequency about in the order named. The clinical appearance varies somewhat, according to the location.

On the tongue it appears as an ulceration with only slight infiltration, unless the anterior portion is involved, when induration is a marked feature. The border of the ulceration gradually fades into the surrounding tissues in the superficial ulcerations, while in ulcerations that are more or less rounded, or crater-shaped, the border gradually slopes inward.

Chancre affecting the gingiva labial fold, gums, soft palate and mucous membrane of the cheeks is similar in appearance to that described as affecting the tongue.

Adenopathy is a prominent feature in all cases of primary syphilis. Chancre of the tongue is accompanied by involvement of the subhyoid and submaxillary glands, producing extensive and firm cartilaginous-like hardness of the tissues in this location. Chancre of the soft palate is accompanied by involvement of the glands at the angle of the jaw.

Diagnosis in these locations may be somewhat doubtful. It must be differentiated from tuberculosis, ulcerating gumma and dental-node, with or without ulceration.

Tuberculosis is a deep ulceration, with sharp-cut, ragged borders. Chancre is a superficial ulceration, with ill-defined borders. The border of chancre is infiltrated and gradually fades off into healthy tissue, while the border of tuberculous ulceration may be raised and sharply defined. Tubercular ulceration is usually accompanied by constitutional derangement. The patient is thin and poorly nourished and physical examination usually reveals the presence of tuberculosis in the lungs.

Ulcerating gumma of late syphilis may simulate chancre, and it is often important to differentiate. A previous history of chancre would, in most cases, establish the diagnosis in ulcerating gumma. Unfortunately, however, this is not always obtainable. We frequently see cases of syphilis in which a history absolutely negative is given. The initial and early lesions may have been so slight as to have escaped the notice of the patient, or, as sometimes occurs, the early lesion may be situated in the urethra or extra genital, where it is very apt to be treated as a gonorrhea. If the succeeding eruption be slight no further notice is given the disease until the late lesions appear.

Gumma of the tongue appears as a hard, painless elevation, which later ulcerates, producing a deep, crater-like ulceration discharging a

yellowish pus. The deep ulceration, situated in a hickory-nut sized elevation, will usually readily be distinguished from the superficial ulceration of initial lesion. The absence of adenopathy is also a strong point in favor of gumma, which is seldom accompanied by enlargement of the neighboring lymphatics unless there is a general adenopathy, when enlargement is slight compared to that accompanying initial lesion.

Dental-node, or traumatic ulcer, is the result of irritation produced by a broken tooth, or malformation causing the teeth to play on the tongue. These lesions are situated on the sides of the tongue and consist of hard callous masses, which may be felt rather than seen, with deep linear ulcerations traversing the infiltration in various directions. They rapidly disappear on removal of the cause. If a malformation—removal, or, if possible, correcting the angle, or grinding off the projection will be necessary. If the ulceration persist, deep cauterization may be required. The deep linear ulceration, in a hard nodular mass, is so characteristic that this condition may be readily distinguished from initial lesion. Almost immediate improvement on removal of the cause would do away with all doubt as to the exact nature in uncertain cases.

Thus we find that the primary evidence of syphilis is an indurated lesion, no matter where situated, with more or less ulceration, although the latter is not always a constant feature. Considering the various locations, the infiltration is most marked when it affects the lips and tip of the tongue. On the buccal mucous membrane and posterior half, infiltration is not so marked, but if we remember the sudden onset and involvement of the neighboring lymphatic glands, which is always a marked feature, accompanying the initial lesion of syphilis, we can readily and positively distinguish between the slow, insidious and progressive character of epithelioma and tuberculosis. Dental-node will offer some difficulty, but the presence of a projection or a roughened tooth playing on a situation, with the deeper infiltration and ulceration, with blotter-paper-like coating, should establish the diagnosis between these conditions.

Having now considered the early, or initial stage, let us next inquire into the character of its consecutive manifestations.

Syphilis was formerly divided into three stages, namely, primary, secondary and tertiary. This division has gradually fallen into disuse, for the reason that no hard and fast line can be estab-

lished between the various forms of eruption. In fact, the so-called secondary eruption may appear while the primary is still present, and the so-called tertiary lesions may appear during the course of the secondary manifestations of the disease.

For the above reasons, recent authors on this subject are inclined to divide the various eruptions of syphilis into "initial lesion or chancre," and the subsequent eruptions into "early and late consecutive lesions." Of course, this division is not without fault, the same difficulty existing as with the other classification. However, the change is to be preferred, as doing away with the former belief of three positive stages, rather than a progression of the same pathologic condition.

The early consecutive lesions appear about from four to six weeks after the appearance of the primary lesion. The interval is known as the second incubation period, in contradistinction to the period intervening between the time of contact with infection to the appearance of the primary lesion, first incubation period; this has been placed at twenty-five (25) days, although liable to wide variations. Test experiments have shown a case to follow with primary lesion in eight days, and some are reported even less (one in 24 hours), while some other experiments showed an incubation period of ninety days.

The consecutive lesions affect the skin and mucous membrane of the mouth and are practically the same, but on account of the difference in anatomic structure there is a difference in appearance and course. The mouth, on account of heat and constant moisture, produces changes in the superficial epithelium entirely different in appearance to the same eruption on the skin. Of the early lesions, which generally occur during the first year of the disease, we have the milder form of eruption—as the erythematous, macular, papular or pustular.

These early eruptions are usually quite general and symmetrical, run a definite course and disappear without scarring. The macular eruption is usually the earliest lesion. The macules are pea to dime sized and can most readily be observed on the flexor aspects of the arms, back and abdomen, although the general cutaneous surface may be involved. The eruption is of a mild red color and very slightly, if at all, raised.

The papular variety either develops directly from the erythematous or appears in a primary eruption. Commonly both are present at one time. The lesions of this eruption vary in size from a pin's head to an inch in diameter and, like the macular, is general and symmetrical in distribution. After a certain time exfoliation begins, producing scaling lesions resembling eczema in some cases, especially in palmar lesions.

The pustular syphilide may follow the papular variety or develop as such. It is most commonly seen in patients who are poorly nourished and, like the preceding eruptions, is general in distribution and consists of lenticular or miliary pustules, or larger crusted lesions.

The mouth may be involved with any of these forms of eruption and may also be the earliest situation for the eruption to appear.

The erythematous variety occurs on the posterior parts of the mouth as a diffuse redness with a sharp outline. It may be seen involving the mucous membrane, over the soft and at its junction with the hard palate, or upon the pillars of the fauces or extending to the uvula, which may be slightly swollen. Occasionally we find several sharply defined reddened macular spots which run together to form patches with sinuous outlines, or there may be disseminated punctate spots on the cheeks and over the vault. From the delicate nature of the epithelium the erythema assumes a grayish color, becomes raised and exfoliated, and we have produced the second variety of eruption, termed erythemato erosive plaque, which appear as superficial, more or less denuded areas of irregular size and shape; these lesions may involve any part of the buccal mucous membrane, but are commonly seen on the lips, the hard and soft palate and pillars of the fauces.

All varieties of the early consecutive or initial lesion, if not aborted either by treatment or natural immunity, resolve into a final stage of quiescence before resolution, and may remain present for an indefinite period. The lesion thus formed is termed a mucous plaque, or patch, and constitutes a type of lesion entirely distinct from the lesions appearing on the cutaneous surface, *condyloma lata*. The early cutaneous eruptions appear and run a definite course, disappearing in from one to three months, without treatment. The mucous plaque, however, may persist as the only evidence of the disease for years. Its recognition is, therefore, im-

portant, since it may be the possible cause for reinfection of the patient and is, at the same time, the most contagious of all the consecutive lesions.

The mucous plaque is a superficial ulceration, with a grayish opaline loosely attached exudate, composed of young cells and detritus. The lesions are round or oval, but may be irregular in outline. They are usually even with epithelium in most cases, but owing to the cell infiltration and exfoliation of the upper layers, together with congestion of the capillaries, we have a variety of lesions developed which differ in the clinical picture to the simple or flat opaline plaque. The varieties thus formed are:

The papular type, due to a cellular infiltration of the papillary body and increase in the mucous papillæ, giving rise to a slightly raised lesion covered with a grayish white exudate or false membrane. When this false membrane, together with the upper layer of epithelium, is exfoliated, we have the condition which is the most frequent form of the early consecutive lesion, namely, the papulo erosive plaque. It is a sharply circumscribed infiltration, with a moist or shining bright or brownish-red surface. This surface becomes covered with a thin coating which is exfoliated and renewed for an indefinite period. If, on the other hand, the round cell infiltration continues as a chronic process (without erosion) the papillæ become elongated, the epidermic layers remain unshed and become thickened and we have developed the papulo hypertrophic plaque. This condition persists as a raised, uneven lesion for an indefinite period or until persistent local and internal treatment is instituted.

The diagnosis of mucous plaque is usually not difficult. There are no hard and fast rules, however, to conclude a diagnosis. The sharply defined grayish patch, without inflammatory zone, which may be slightly raised, is unlike any other condition. Simple aphthæ, or canker sore, may, in some cases, give rise to doubt, but the inflammatory zone, with sharply defined cut-out-like ulceration, should easily establish this condition. Canker sore is usually very painful, while syphilis is only slightly or not at all so. In fact, the patient is usually unconscious of any unpleasant symptoms from mucous plaque, unless irritated by smoking or highly seasoned food.

In differentiating the superficial ulcerative form, with polycyclic borders, we may mistake the condition known as *exfoliatio*

areata lingua. This disease usually begins in childhood as a small elevated patch, not as large as a mucous patch, and rapidly spreads, developing a broken ring-like lesion. The spreading border is grayish-white and slightly raised, while the central part of the lesion is smooth.

The superficial character of this condition, with the history of rapidly changing character of appearing and disappearing rings, or half-moon shaped lesions, without subjective symptoms, will readily define this condition from the superficial form of ulcerative syphilitic mucous plaque. (In the later part of the disease we have the mucous plaque appearing as a dry, smooth, persistent, bluish-gray patch.) The common locations are the borders of the tongue, cheeks and lips. This resembles the simple leukoplakia.

The differential diagnosis between leukoplakia, non-specific, and the mucous plaque of this variety is extremely difficult, inasmuch as we see conditions in syphilis which cannot be clinically pictured as differing from the non-specific variety. This has given rise to considerable speculation. Some authors have claimed that all varieties were of specific origin, with an added irritant—as smoking, etc. In fact, smoking is known to be the exciting factor in syphilis, as well as the non-specific variety. I think we might readily have a variety of mucous plaque due to irritation from various causes not necessarily specific, but due to a stimulation of the same physiologic functions by the invasion of microorganisms; and we may shortly expect this subject to be cleared up by careful microscopic examinations of the lesions, for the specific germ seems, at last, to have been found in the *spirochete pallida*. We should treat cases of leukoplakia as suspicious of syphilis, where the diagnosis cannot be positively made to the contrary.

Gumma of the tongue is a somewhat rare affection, which fact is probably due to improved methods of treatment. We do not see the awful results of syphilis that occurred years ago, when mercury was pushed to the point of salivation. Furthermore, the laity have been educated regarding the treatment, and of all diseases that the body is subject to syphilis stands first in regard to benefit from the same. This is a strong factor in treating this disease, as the patient, on stopping treatment, is at once conscious of a depression, which disappears on renewing same, and I think it a wise plan to let the patient know the full extent of damage which will result if treatment

is neglected. Also tell him that his condition is not beyond repair. One of the worst features of syphilis is the neurosis or dread which is developed from the knowledge of possible recurrences of eruption. A patient who has been entirely unconscious of his ego will now carefully examine himself, ascribing every slight symptom which is unusual, or the appearance of every pimple, to his disease. Even a considerable eruption, such as marginate eczema around the scrotum or a leukoderma, which he has had for years and never noticed, becomes a part of his ailment. This condition is unfortunate and it would at first seem wrong to impress him with the danger of neglecting treatment by information of possible future outbreaks, but as his general condition improves this symptom disappears, and he is none the worse for having been scared—so to speak—into a rigid course of treatment.

The gumma, when it occurs, is one of the most important lesions of syphilis to recognize, especially when it affects the tongue, as it resembles other ulcerating conditions, which are fatal, and itself is fatal in some cases on account of the destruction caused, if not treated. It appears as a hard mass in the mucous, submucous or muscular tissue, and after elevating to form a nodule, varying from a pea to a walnut, or larger, it breaks down, discharging a mucilaginous material, when it advances rapidly, and may involve the whole tongue and palate.

It must be differentiated from epithelioma and tuberculosis. The main features of distinction are:

1. Gumma occurs on the dorsum of the tongue. It is often multiple, follows infiltration, sloughs rapidly and becomes deeply excavated. It is not very painful. In fact, the absence of pain in sloughing syphilitic lesions is an important diagnostic point. The borders of ulceration are thin and abrupt, with undermined edges. The base presents a grayish adherent mass of detritus. The edge is swollen and red.

Epithelioma is usually on the border of the tongue. There is usually a previous history of a warty growth or leukoplakia. It advances slowly. Ulceration is slight and superficial, except in advanced cases. Lancinating pains are a prominent feature. The edges are thick, elevated and irregular. The base of the ulceration is reddish and yellowish.

Tuberculosis is usually located on the tip of the tongue. There

is no history of preceding tumor. It begins on the surface as small, elevated tubercles, advances slowly. The border is flat and jagged. The base of the ulceration presents minute granulations, some undergoing caseous degeneration.

Thus we find three diseases, presenting somewhat similar clinical conditions when considered as a whole, but which differ in essential features.

Gumma is a rapid ulceration, preceded by a nodular swelling, producing a sharply defined ulceration. Epithelioma is a slow, superficial ulceration, preceded by a warty growth or leukoplakia, producing an uneven ulceration, with elevated borders; while tuberculosis begins on the surface, without preceding tumor, and presents a granulating-like ulceration.

By bearing in mind these main distinctive features we can usually distinguish the condition in hand. Where there is any doubt we can positively establish the diagnosis of gumma, or, in fact, any of the lesions of syphilis, by instituting treatment. This is an important point to remember and will, sometimes, prevent a grave error in diagnosis.

I can remember several cases which would have either terminated fatally or have been operated upon for the removal of the tongue were it not for the above test. It is a simple matter to place the patient on syphilitic treatment for one or two weeks, when, if the lesion is one of syphilis, an improvement will be observed. Especially in gummatous lesions the improvement is quite rapid and can even be observed in one or two days. The patient will tell us that he is feeling decidedly better. These patients, even while not conscious of any subjective symptoms, although many are depressed and become tired on the slightest exertion, will tell us that they notice a feeling of well-being after instituting treatment, which cannot be defined, but, in practice, is of the utmost importance in judging the beginning of improvement and its continuance. In fact, so long as a syphilitic patient feels well, eats and sleeps well, there is very little cause to worry, even if his symptoms disappear slowly. It is far better to allow a longer time for recovery than to increase the doses of mercury or potassium iodid until, in many cases, the physiologic functions are pushed beyond control and debility ensues from salivation, gastritis, etc.—*Items of Interest.*

The Dental Digest.

PUBLISHED THE LAST WEEK OF EVERY MONTH

At 2231 Prairie Avenue, Chicago,

Where All Communications Should be Addressed.

Editorial.

ENTHUSIASM SHOULD BE TEMPERED WITH JUDGMENT

In the practice of dentistry it is well at all times to be on our guard and as far as possible avoid using new methods and materials until their usefulness has been fully demonstrated. From time to time we have gone through periods of extreme changes, generally resulting in many grave mistakes which proved to be detrimental both to the practitioner and to the community. We believe we are in just such a period of change at the present time, and we might date this back to the beginning of the general practice of porcelain inlay work. An examination of this practice for the last ten years will certainly show great extremes and many mistakes wherein porcelain was adopted when gold should have kept its place. This is such an acknowledged fact now that it does not need discussion here, but the relief that has now come from the new process of casting gold fillings, brought out so prominently by Dr. Taggart less than a year ago, has come at an opportune time, as practitioners were casting about to find some relief or method to take the place of the failures of porcelain; and especially was this true in large restorations. But now what is following?

Great extremes and defective operations growing out of—first, carelessness and a lack of proper knowledge of the preparation of the cavity. Second, the misconceived idea that the operation is easy. When the practitioner adopts the idea or acts on the belief that the fitting of a filling of wax, which is to be replaced by gold when cast, is an easy part of the operation he is bound to have what accuracy would call a failure. Many practitioners are using wax

which is easily shaped and bent and making a restoration which is bound to prove a misfit when completed, if for no other reason than that the wax was not a proper fit when made. If one will fit wax into a cavity out of the mouth and examine carefully these wax restorations under a magnifying glass, it will be discovered that there are many gaps, here and there, away from the edges of the cavity, which, when completed in gold, and especially when cemented, will show defects and generally at points where accuracy and close fitting are absolutely essential. If this be true in making the wax fillings out of the mouth, how much more care should be exercised and observed when fitting them in extensive cavities in the teeth in the mouth. We contend that a wax suitable for this purpose should be stiff and unyielding; that will break at the sharp edges rather than bend away from the place.

It is a mistake also to insert cast fillings in moderate cavities which could be done quicker and more perfectly by the ordinary process of gold foil packed filling. This is true for two reasons: First, as we have observed that it can be done quicker and more accurately; and, second, it can be done in many cases without sacrificing so much tooth structure, which is necessary in the making of cast gold restorations in order to be able to remove the wax filling without disturbing it. The very best of material and the very best instruments that can be made for casting are not too good and are essential for the perfect casting of these gold restorations in difficult cavities; and we contend, generally speaking, that these are the only cavities in which these methods should be adopted. This same proposition will also hold true in regard to the adaptation of artificial crowns to the roots of badly decayed teeth by the casting process, which in our opinion is one of the most valuable applications of the method, and is a great improvement over the old method of banding the root by cutting it down and forcing the band under the margin of the gums.

It is not our intention to dampen the enthusiasm of the profession over this new method, but to call attention to these precautions with a view of lessening mistakes and failures which are liable to bring a most useful method into disrepute. Use the casting process in all of its applications, but temper your enthusiasm with good, sound judgment.

J. N. C.

Notices.**TENNESSEE STATE DENTAL ASSOCIATION.**

The Tennessee State Dental Association will hold its forty-first annual meeting in Nashville, May 7, 8, 9, 1908. A cordial welcome is extended to all ethical practitioners.

DELAN KINNEY, D.D.S., Cor. Secy., Nashville, Tenn.

MISSISSIPPI STATE BOARD OF DENTAL EXAMINERS.

The Mississippi State Board of Dental Examiners will meet for the purpose of examining applicants for license in Jackson, May 19, 1908. For detailed particulars and requirements address the secretary.

E. DOUGLAS HOOD, D.D.S., Tupelo, Miss.

NEBRASKA STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Nebraska State Dental Society will be held in Omaha, May 19, 20 and 21, 1908, at Creighton Dental College. All reputable members of the profession are cordially invited to attend.

E. H. BRUENING, D.D.S., Secy., Omaha, Neb.

KENTUCKY STATE DENTAL ASSOCIATION.

The Kentucky State Dental Association will hold its business sessions at Louisville, June 2 and 3, 1908. The regular program will be cooperative with the Semi-Centennial Jubilee meeting at Indianapolis, June 4, 5, 6, 1908. For any information address

W. M. RANDALL, D.D.S., Secy., Louisville, Ky.

CALIFORNIA STATE DENTAL ASSOCIATION.

The California State Dental Association will hold its annual session in San Francisco, June 9, 10, 11, 1908.

At least two prominent clinicians are expected from the East; also larger and better exhibits than ever before.

C. E. POSE, D.D.S., Secy., 1424 Gough street, San Francisco, Cal.

MICHIGAN STATE DENTAL SOCIETY.

The Michigan State Dental Society will hold its annual meeting on Wednesday, Thursday, Friday and Saturday, June 10 to 13, 1908, inclusive, on board the Steamer "City of Mackinaw," on a trip through the Detroit river, Lake St. Clair, the Flats and on to Mackinaw and the "Soo." The total expense of the trip, including passage, meals, berth, will be \$19 for the round trip, and all our ethical friends are invited to join us.

The principal feature of the meeting will be table clinics, good papers, a complete dental exhibit and a good time.

Four days to find out what your fellow practitioners are doing, an ideal

meeting under ideal conditions. Those desiring to have accommodations reserved for them should apply at once to Dr. O. W. White, 406 Fine Arts Building, Detroit, stating the number of persons in party and whether it is all men.

A deposit of \$5 is required for each reservation.

O. W. WHITE, D.D.S., Local Arrangement Committee, Detroit, Mich.

NEW HAMPSHIRE DENTAL SOCIETY.

The thirty-first annual meeting of the New Hampshire Dental Society will be held at the Cheshire House, Keene, N. H., May 12, 13 and 14, 1908. A good program is being prepared and all reputable members of the dental profession are cordially invited to attend.

F. F. FISHER, D.D.S., Secy., Manchester, N. H.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The Minnesota State Board of Dental Examiners will hold a special meeting at the State University Dental Department in Minneapolis, beginning at 9 o'clock, June 10, 1908. At this meeting all applicants for registration in this state will be examined. For further information apply to

GEO. S. TODD, Secy., Lake City, Minn.

ILLINOIS STATE DENTAL SOCIETY.

The forty-fourth annual meeting of the Illinois State Dental Society will be held at Springfield, May 12, 13, 14, 15, 1908.

The sessions and clinics will be held in the State Armory Building. Wednesday and Friday mornings will be devoted to clinics, other sessions to papers and discussions.

ARTHUR D. BLACK, D.D.S., Secy., 31 Washington street, Chicago.

MISSISSIPPI STATE DENTAL ASSOCIATION.

The fifteenth annual meeting of the Mississippi State Dental Association will be held in the Senate Chamber of the Capitol at Jackson, Miss., on June 9, 10 and 11, 1908.

A special program is being arranged and a large attendance is expected. All ethical practitioners invited. For further particulars address

E. DOUGLAS HOOD, D.D.S., Tupelo, Miss.

ALUMNI ASSOCIATION WASHINGTON UNIVERSITY DENTAL DEPARTMENT.

The forty-second annual meeting of the Alumni Association of Washington University Dental Department (Missouri Dental College) will be held at the College Building, Twenty-seventh and Locust streets, St. Louis, Mo., on May 22 and 23, 1908.

The executive committee are exerting every effort to make this the best meeting of its character in the history of the school. It is hoped

that all graduates of the institution will make a special effort to be present.

If you will read a paper or give a clinic, please notify

H. R. FAHERTY, D.D.S., Secy., 2355 Lafayette avenue, St. Louis, Mo.

TEXAS STATE BOARD OF DENTAL EXAMINERS.

The regular semiannual meeting of the Texas State Board of Dental Examiners will be held in Dallas beginning 9 a. m. Monday, June 15, 1908. No interchange of license with any other state. No special examination to practitioners already in practice. Application accompanied by fee, \$25, should be filed with secretary by June 10. For further information address

BUSH JONES, D.D.S., Secy., Dallas, Texas.

EIGHTH DISTRICT (MICH.) DENTAL SOCIETY.

The Eighth District Dental Society, a component part of the Michigan State Dental Society, was organized at Saginaw, March 3, 1907, and the following officers were elected: President, W. R. Purmort, Saginaw; Vice-President, H. B. Hulbert, Bay City; Secretary, W. E. Moore, Saginaw; Treasurer, C. J. Hand, Bay City.

W. E. MOORE, D.D.S., Secretary,
Saginaw, Mich.

KANSAS STATE BOARD OF DENTAL EXAMINERS.

The next meeting for examination of applicants for registration will be held in Topeka in the Copeland Hotel annex May 13, 14, 15 and 16, 1908. The first session will begin the evening of the 13th at 7:30 p. m. A graduate of a reputable college is not required to take an examination. The fee is \$25. Applicants will be expected to furnish all instruments except a vulcanizer.

The examination will be both practical and theoretical. Those expecting to take the examination should write the secretary for complete information.

F. O. HETRICK, D.D.S., Secy., Ottawa, Kans.

INDIANA STATE DENTAL ASSOCIATION—SEMI-CENTENNIAL.

The Indiana State Dental Association will celebrate its fiftieth anniversary, June 4-5-6, 1908, at Indianapolis, with one of the largest meetings ever held.

The State Associations of Michigan, Ohio, Kentucky and Illinois have accepted invitations to meet with us. There will be five essayists: Dr. Truman W. Brophy, Chicago, Ill., subject, "The Deformity of Cleft Palate; Its Influence Physically and Mentally; Dr. George Zederbaum, Charlotte, Mich., subject, "The Education of a Nation—Teeth;" Dr. H. B. Holmes, Louisville, Ky., subject, "The Influence and Benefits of Associations;" Dr. M. H. Fletcher, Cincinnati, O., subject, "Alveolitis; the Disease of

which Pyorrhea Alveolaris Is One Stage;" Dr. G. V. Black, Chicago, Ill., subject, "Supernumerary Teeth."

There will also be fifty clinicians from the four states mentioned, and practically all other State Associations will be represented by clinicians.

All ethical dentists are invited, as this will be the big meeting of the year.

D. A. HOUSE, D.D.S., Indianapolis, Ind.,
Committee on Publicity.

VIRGINIA STATE DENTAL ASSOCIATION.

The thirty-ninth annual session of the Virginia State Dental Association will be held at the main hall of the Medical College of Virginia, Richmond, Va., beginning July 14, 1908.

The intention is to make this the most successful meeting in the history of the organization.

Clinics will be given and papers read by eminent members of the profession.

All ethical practitioners are cordially invited to attend.

W. H. PEARSON, D.D.S., Cor. Secy., Hampton, Va.

INTERSTATE DENTAL FRATERNITY.

The Board of Governors of the Interstate Dental Fraternity will convene for the annual business meeting of the order in Boston, at The Brunswick, Boylston street, July 24, 1908. The annual banquet will occur during the week and due notice thereof will be sent to the members as soon as arrangements can be made and the exact date fixed. It is hoped that the Fraternity will meet in large numbers on this occasion.

R. M. SANGER, D.D.S., National Secy., East Orange, N. J.

CONNECTICUT DENTAL COMMISSION.

The Dental Commissioners of the State of Connecticut will meet at Hartford, on Wednesday, Thursday and Friday, June 17, 18, and 19, 1908, to examine applicants for license to practice dentistry, and for the transaction of any other business proper to come before them.

On receipt of application blank filled in and sworn to and accompanied with fee of twenty-five dollars (\$25) each applicant will be sent a number, which number will represent said applicant during the examination.

The practical examination will take place at Putnam Phalanx Armory, corner Haynes and Pearl streets, on Wednesday, June 17. All prosthetic pieces should be tagged with applicant's number and handed to Commissioners at 9 o'clock, Wednesday morning. Applicants whose numbers range from one to sixteen, inclusive, will be examined in operative dentistry at 10 a. m. Those whose numbers are above sixteen will be examined in operative dentistry at 2 p. m. All applicants whose credentials are accepted shall be entitled to take both the practical and the theoretical examinations.

Credentials shall be examined at the Hotel Heublein, Tuesday evening at 8:30, and at Putnam Phalanx Armory at 9 o'clock Wednesday morning.

On Thursday, June 18, the theoretical examination will be held from 9 to 11, 11:30 to 1:30, and 3:30 to 5:30. On Friday, June 19, from 9 to 11, and 11:30 to 1:30. Theoretical examinations will be held at the State Capitol.

By order of the Commission,

GILBERT M. GRISWOLD, Recorder,
783 Main Street, Hartford. Conn.

NATIONAL DENTAL ASSOCIATION.

The twelfth annual meeting will be held in Boston, July 28 to 31, 1908, inclusive, and promises to be one of the most important in the history of the association. It is twenty-eight years since our national organization held a meeting in New England and it is confidently predicted that the attendance and interest of this gathering will surpass that of any previous session. Hotel Somerset, on Commonwealth avenue, has been selected as headquarters for the association and where all meetings will be held including those of the sections. The clinics will be held in Tufts College Dental School, Huntington avenue, on the forenoons of Wednesday and Thursday.

Rates at Hotel Somerset: Two in room with bath, \$4 per day; one in room with bath, \$3 per day; two in room without bath, \$3.50 per day; one in room without bath, \$2.50 per day.

For reservations, etc., apply to the chairman of the local committee of arrangements, Dr. W. E. Boardman, 419 Boylston street, Boston.

Membership in the association is limited to delegates from State Societies, but a most cordial invitation is extended to all reputable dentists to attend the meeting.

DR. WILLIAM CARR, Pres., 35 West Forty-sixth street, New York City.

DR. CHARLES S. BUTLER, Secy., Buffalo, N. Y.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the State of Illinois will be held in Chicago, at the Northwestern University Dental School, southeast corner of Lake and Dearborn streets, beginning Thursday, June 4, 1908, at 9 a. m.

Applicants must be in possession of the following requirements in order to be eligible to take the examination: (1) Any person who has been engaged in the actual, legal, and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years just prior to application; or (2) is a graduate of and has a diploma from the faculty of a reputable dental college, school, or dental department of a reputable university, or (3) is a graduate of and has a diploma from the faculty of a reputable medical college or medical department of a reputable uni-

versity and possesses the necessary qualifications prescribed by the board.

Candidates will be furnished with proper blanks and such other information as is necessary, on application to the secretary. All applications must be filed with the secretary five days prior to the date of examination. The examination fee is twenty (\$20) dollars, with the additional fee of five (\$5) dollars for a license.

Address all communications to

J. G. REID, Secy.,
1204 Trude Building, Chicago, Ill.

FIFTH DISTRICT (MICH.) DENTAL SOCIETY.

The Fifth District Dental Society, a component part of the Michigan State Dental Society, was organized at Grand Rapids, Feb. 11, 1908, and the following officers were elected: President, G. F. Smith, Belding; Vice-President, H. D. Watson, Grand Rapids; Secretary, C. A. Burbridge, Grand Rapids; Treasurer, P. F. Hines, Lake Odessa.

C. A. BURBRIDGE, D.D.S., Secretary.
Grand Rapids, Mich.

MICHIGAN STATE BOARD OF REGISTRATION IN DENTISTRY.

The Michigan State Board of Registration and Examination in Dentistry will hold its next semiannual meeting to examine candidates for registration in Michigan, beginning Monday, June 8, 1908, at 8 o'clock, and continuing through the 13th, in the Dental Department of the University of Michigan at Ann Arbor. Applications must be in the hands of the secretary at least five days before the meeting.

For full particulars address the secretary,

E. A. HONEY, D.D.S., Kalamazoo, Mich.

KENTUCKY STATE BOARD OF DENTAL EXAMINERS.

The Kentucky State Board of Dental Examiners will meet for the examination of applicants at Louisville, on Tuesday, June 2, 1908, at the Louisville College of Dentistry, commencing at 9:30 o'clock a. m.

Each applicant for examination shall be required to deposit with the secretary of the board his or her recent photograph, with signature on the reverse side, both of which shall be certified to by the dean of his or her graduating college, or other parties acceptable to the board. Applicants must be graduates of reputable dental colleges.

Applicants shall be examined in the following subjects: Anatomy, physiology, materia medica, pathology, histology, operative dentistry, oral surgery, chemistry, metallurgy, prosthetic dentistry, crown and bridge work, oral hygiene, and dental prophylaxis.

Applicants must come prepared with instruments, engine and material, excepting bellows, blowpipe, lathe, stones and polishing cones, to do the above-mentioned work.

Application for examination must be made upon blanks furnished by

the board, and must be accompanied by a fee of \$20 and the above-mentioned photograph, all of which must be filed with the secretary ten days before the date of examination. For further information address

J. RICHARD WALLACE, D.D.S., Secretary,
The Masonic, Louisville, Ky.

MONTANA STATE BOARD OF DENTAL EXAMINERS

The annual meeting of the Montana State Board of Dental Examiners will be held in Helena, commencing Monday, July 13, 1908, and continuing three days. All applications and fee of \$25 should be filed at least ten days prior to the meeting. Application blanks and the dental laws of Montana, which every applicant is expected to read before the examination, will be furnished upon application to the secretary. Vulcanizers and dental engines, without handpieces, will be furnished.

D. J. WAIT, Secy., 103 Broadway, Helena, Mont.

NEW JERSEY STATE BOARD OF REGISTRATION IN DENTISTRY.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semiannual meeting to examine candidates, beginning Monday, July 6, 1908, and continue through the 7th and 8th, in the Assembly Chamber of the State House at Trenton, N. J.

Professional attainments, preliminary qualifications and photographs must accompany the application, or it will not be accepted.

Sessions begin promptly at 8 a. m., each day.

For full particulars address the secretary,

CHARLES A. MEEKER, D.D.S.,
29 Fulton St., Newark, N. J.

TENNESSEE STATE BOARD OF DENTAL EXAMINERS.

The Tennessee State Board of Dental Examiners will hold its annual meeting in Nashville, Tenn., May 16-19, 1908.

In accordance with the provisions of the recently amended dental law, all applicants for registration must present diplomas from reputable dental colleges, pass a written examination by the State Board and give a practical demonstration of proficiency in operative and prosthetic dentistry, making an average of at least 75 per cent. in all branches taught in dental colleges, prior to registration.

Applications for examination must be made to the Secretary-Treasurer at least ten days before the meeting of board. Examination fee, \$10.

F. A. SHOTWELL, D.D.S., Sec.-Treas.,
Rogersville, Tenn.

LATEST DENTAL PATENTS.

876,997. Electrical, dental and surgical appliance, H. F. Pressey, Bridgeport, Conn.

- 877,585. Rubbing apparatus for the gums, L. J. F. Nicolai, Dresden, Germany.
- 878,164. Tooth-brush, W. N. Taylor, Diamond, Cal.
- 878,486. Tooth-brush, L. H. Crowell, deceased, Halifax, Nova Scotia, Canada; E. R. and M. O. Crowell, executors.
- 812,753. Denture, Reissue, R. M. Craig, Dennison, Ohio.
- 879,179. Specialist's chair, W. H. Kersey, Indianapolis, Ind.
- 879,254. Manually controlled dental engine, J. L. Gauthier, Washington, D. C.
- 879,537. Dental implement, J. Gartrell, Washington, D. C.

News Summary.

I. P. RICHARDSON, 83 years old, a retired dentist of Eufaula, Ala., died February 5, 1908.

J. W. STRANGE, 55 years old, a pioneer dentist of Roseburg, Ore., died of dropsy, February 9, 1908.

J. L. MOORMAN, 62 years old, a retired dentist of Cloverport, Ky., died after a long illness, March 1, 1908.

GEORGE A. GRACE, 72 years old, a retired dentist of Concord, N. H., died from heart trouble, February 4, 1908.

EDWIN J. JORDAN, 50 years old, a well-known dentist of Boston, Mass., died of pneumonia, February 23, 1908.

WILLIAM WAGNER HOFFMAN, 63 years old, for 40 years a dentist in Easton, N. J., died February 16, 1908.

CHARLES S. CAVANAUGH, a popular young dentist of Santa Barbara, Cal., died of appendicitis, February 14, 1908.

CLARENCE H. BOWERS, 50 years old, a dentist of Clinton, Mass., died from an intestinal trouble, January 26, 1908.

ANDREW S. WALSH, 42 years old, a dentist of Taunton, Mass., died after a six months' sickness, February 5, 1908.

HOWARD L. WAIDE, 34 years old, a dentist of Chicago, died at Encampment, Wyo., of spinal meningitis, March 11, 1908.

CHARLES K. PEVEY, 64 years old, a practicing dentist of Worcester, Mass., for the past 42 years, died of pneumonia, February 23, 1908.

CHARLES POMAINVILLE, a young dentist of Grand Rapids, Wis., died from injuries received from a gasoline explosion, February 6, 1908.

FRANK FRENCH, 73 years old, a well-known dentist and one of the oldest members of the profession in New York state, died suddenly, March 6, 1908.

C. C. WENTWORTH, 55 years old, for more than 25 years a practicing dentist of Milwaukee, Wis., died as a result of a stroke of paralysis, February 18, 1908.

WALTER J. PETRIE, 38 years old, a dentist of Kenosha, Wis., and at one time a professor of operative dentistry in Northwestern University Dental School, died suddenly at Silver City, N. M., February 12, 1908.

EARL E. WILSON, 27 years old, a dentist of Peoria, Ill., died March 10, 1908.

LIBRARY LEFT TO THE HARVARD DENTAL SCHOOL.—The will of Thomas Fillebrown directs, "to the president and fellows of Harvard College, all of my professional library, for the use and benefit of the Dental School of Harvard University."

DIED AS A RESULT OF DENTAL CLINIC.—After suffering continuously since having a molar extracted at a clinic at the National Dental Convention, held at Minneapolis, last summer, Dr. J. L. Whinery, a prominent dentist of Marshalltown, Ia., and well known in the state, died March 7. Cerebral trouble developed following the clinic.

BAD TOOTH KILLS A GENERAL.—Brig. Gen. Henry Carroll, U. S. A., retired, a veteran of the Civil and Spanish-American wars and an Indian fighter, is dead at his home in Colorado Springs, aged 70 years. Death resulted from blood poisoning, caused by an abscessed tooth, and superinduced from wounds received in the Spanish-American war.

FIRES.—Dr. F. A. Ryder, Lynn, Mass., March 2; loss, \$500.—Pelton & Crane, manufacturers of dental supplies, Detroit, Mich., February 9; loss, \$14,000.—Dr. E. A. Dill, St. Louis, Mo., February 12; loss, \$4,000.—Dr. Dorward, Omaha, Neb., February 8; loss, \$500.—Boston Dental Parlors, Racine, Wis., February 7; loss, \$1,500.—Dr. D. P. Wheeler, Madison, Wis., February 18; loss \$1,500, insurance \$1,000.

PHENOL SULPHONIC ACID.—I make use of this drug to aid in removal of pulp nodules and to open up small canals which are closed by dried blood or hardened pulp tissue. I find it does quite as well as sulphuric acid, and does not irritate the tissues in the apical space nearly so badly if a little should accidentally pass through the apical foramen as does the latter preparation.—E. A. MAWHINNEY, *Northwestern Dent. Jour.*

EXAMINATION OF TEETH OF CHILDREN IN PUBLIC SCHOOLS.—Potter believes it is very desirable that once a year the teeth of all children in grammar schools be examined and their condition reported to parents with appropriate advice. This examination should, preferably, be made in the fall of the year, soon after the opening of school. Short, practical talks to school children would help much to increase their intelligence as to the value of good teeth in promoting nutrition and general health, and would interest them in the condition of their own mouths.—*Journal Amer. Med. Assoc.*

TO MAKE WAX TRIAL PLATES ADHERE TO THE MOUTH.—All of the older practitioners have heard of powdered gum tragacanth, that some dentists give their patients when they insert the upper plate, telling them if it does not stay to sprinkle a little gum tragacanth on it, and it will stick. I am happy to say that I have not felt the need of that. There are times, however, when it is distinctly useful. When inserting a trial plate to get the bite or to see that the teeth are properly mounted so as to meet all requirements by sprinkling the palatal surface with gum tragacanth any trouble from the plate not remaining in position will be obviated.

They can move their lips and talk and laugh, and do as they please for an hour, and there you have your trial plate in position.—H. T. KING, *Dental Summary*.

DENTIST'S DRILL INSIDE HIM.—With a sharp-pointed steel drill in his stomach, Andrew Bowlby, of Windsor, Ont., is moving about gingerly and wondering what will happen next. While in a dentist's chair a small drill became detached from the handpiece, and before it could be caught had slipped down Mr. Bowlby's throat, and, presumably, into the stomach, where it now reposes.

DENTAL COLLECTION FOR UNIVERSITY OF MICHIGAN.—It has been announced to the Board of Regents that Mrs. Miller, widow of the late Dr. W. D. Miller, dean-elect of the Dental Department of the University of Michigan, whose death occurred before he assumed active duty, had presented most of his books, slides and specimens to the university. A few were reserved for the family and others given to the University of Pennsylvania.

MARRIAGES.—J. M. Hurlburt, a dentist of Botkins, O., was married to Miss Ida Wertz of Wapakoneta, March 5, 1908.—Fred C. Daily, a dentist of Fairfield, Ill., was married to Miss Mabelle Cox, also of Fairfield, February 24, 1908.—William S. Kennedy, a dentist of The Dalles, Ore., was married to Miss Edna Carlson of Spokane, Wash., February 12, 1908.—Donald Davidson, a dentist of Woodstock, Ont., was married to Miss Lennie M. Scratch of Kinfsville, February 15, 1908.

ANESTHESIA OF THE TEETH BY INTRODUCING A COCAIN TAMPON INTO THE NOSE.—The technic and the anatomy of the parts are described with illustrations, and the extent of the anesthesia induced. The intimate relations between the anterior dental nerve and the floor of the nasal fossa explains how the nerve is anesthetized by the cocain tampon. The latter should be about the size of an almond and be inserted in the anterior part of the nasal fossa.—*Journal Amer. Med. Assoc.*

FIVE HOURS' PRACTICE ENOUGH.—I still believe that the average dentist will make more money, live a longer and more useful life, by practicing from ten to three continuously, and devoting the remaining part of the day to healthful, recreative pursuits, baths and massage, golf, tennis, driving, etc., than to put in the laborious hours which many do, and which seem momentarily profitable, but which with the great majority lead to mental depression, general ill-health, and early decay.—WM. LEON ELLERBECK, *Dental Cosmos*.

PHYSICIANS' AND DENTISTS' FEES IN CONSTANTINOPLE.—In a recent issue of Daily Consular and Trade Reports reference is made to the high charges for services made by physicians and dentists in Constantinople. The consul reporting says: "Other exorbitant charges are physicians' and dentists' fees. A physician never charges less than \$2.50 for a visit to his consulting room, and \$5 is the usual fee for his visit to one's house, or more if in the country. Dentists seem to vie with each other as to who

can make the heavier charge. It is nothing unusual to be charged \$5 for dentistry for which one would pay \$1 in the United States. Although the charges of pharmacists are regulated by tariff issued by the Imperial School of Medicine, this is only a safeguard for the poor, and a prescription of a good physician sent to a reliable pharmacist to be dispensed will be charged for according to the rank of the patient in whose name it is issued."

SWALLOWS FALSE TEETH.—While eating some salad, Feb. 11, Miss Mary King, an aged woman, of Janesville, Wis., swallowed her false teeth. The plate caught in her throat, and it was necessary to saw it in two to keep her from choking to death.

TRUE TO NATURE.—"Are you satisfied with your dentist?" "Perfectly. He's a real artist. His false teeth are perfect jewels." "Can't you tell the difference?" "They are exact imitations of nature. There is even one that's so good an imitation that it aches sometimes."

MOUNTING CARBORUNDUM STONES.—Having had trouble heretofore in mounting carborundum stones, I happened to think of de Trey's low-fusing porcelain. You can fill the little cavity in the stones with the porcelain body, and when it fuses pass the mandrel into it. Dry it out over a Bunsen flame, having the mandrel in a pin-vise. By this means a stone can be mounted absolutely true, and will stand heat and moisture exceedingly well. You can throw it into ice water while it is white hot without loosening it.—W. B. DILLS, *Dental Cosmos*.

AMPUTATE LINGUAL ROOT OF MOLAR.—A great many times an upper molar whose lingual root has become exposed its whole length by absorption of the process and gum, is extracted. In these cases I have amputated the lingual root close to the bifurcation and filled the pulp canal, so saving the tooth that would otherwise have been extracted, and thereby giving my patient a molar that will be useful for years to come. To extract such a tooth often deprives the patient of a very useful organ and one that he cannot afford to lose.—M. W. OLSON, *Dental Review*.

A CLASS OF ANTRAL DISEASE BEST TREATED BY THE RHINOLOGIST.—It must be evident to all present that when we have solved the question as to the cause of an antral infection, the treatment in a measure will suggest itself. If a patient is suffering from a hypertrophic rhinitis, causing a stricture of the ostium maxillare, the nasal mucous membrane must be restored to a fairly healthy condition before it can be safely said that the extensions of the Schneiderian membrane which line the associated sinuses are free from pathologic change. When either the ethmoidal or frontal sinuses are the seat of a suppurative process, the antra are in imminent danger of infection. The excellent work in connection with the anatomy of these parts conducted by Zuckerkandl, Cryer and others clearly demonstrates the manner in which the frontal and maxillary sinuses may infect one another through the medium of the infundibulum and the hiatus semilunaris. Following attacks of influenza and other maladies in which

catarrhal symptoms of the nasal chamber are manifest, secondary infection of the sinuses of the face is not an infrequent sequence. In all such cases the resultant antral empyema is best handled, and the parts more quickly restored to the normal, by treatment at the hands of the rhinologist.—M. I. SCHAMBERG, *Dental Cosmos*.

REPAIRING INLAYS.—It must be remembered that where there is masticatory stress, one element of failure in connection with any inlay is the possibility of the chipping of a portion of the tooth structure itself adjacent to the inlay so that it comes back to you with a little crevice; that crevice is more easily managed if the inlay is of gold, because you can then insert a small gold filling which shall be partly anchored into the tooth substance and partly anchored into the gold, which can be cut into, whereas, if you had an inlay of porcelain your anchorage must be entirely in the tooth structure or else you must remove the porcelain and make another one.—R. OTTOLENGUI, *Items of Interest*.

COAGULATING PROPERTIES OF PHENOL.—Probably the most discussed of all our remedies is phenol. Among other things, it has been accused of blocking its own action by coagulating the albumin in the tubuli. Professor Miller shows that bacteria penetrate the tubuli about $1/250$ of an inch, so that the coagulation would not have to be very deep in order to be effective. As a matter of fact, we do not deal with albumin in the putrescent canal, but albuminous liquids, which are entirely different substances. While phenol coagulates normal egg albumin, it will not coagulate decomposing egg albumin. It has been proved by a number of investigators that phenol when sealed up with normal albumin penetrates to every part.—*Western Dental Journal*.

DIFFICULT IMPRESSIONS.—One may occasionally have cases where it is difficult if not impossible to insert an ordinary impression tray sufficiently large to take the impression of the dental arches, owing chiefly to the smallness of the external opening. One can stretch the lips and angles of the mouth to their fullest extent without hurting the patient, if one takes a double piece of note paper about an inch and a half wide and three inches long and places that on the right side of the patient's mouth; then, as the tray is inserted sideways on the left side, the paper on the other side is made to act as retractor, perfectly protecting the side of the mouth from abrasion and permitting the tray to slide in quite easily.—HARRY ROSE, *British Journal of Dental Science*.

ROBBERIES.—Dr. O. J. Fortch, San Francisco, Cal., office entered February 9 and a considerable amount of gold and other materials taken.—Boston Dental Parlors, San Francisco, instruments and supplies, valued at \$100. February 20.—Dr. Lind, Kankakee, Ill., office entered by sneak thieves, February 13, and gold valued at \$40 taken.—Dr. R. J. Hollenbeck and M. L. Hanaford, Rockford, Ill., were victimized to the amount of \$500 and \$25, respectively, March 4.—Elgin, Ill., dentists' offices were visited February 29. Dr. Gail B. Elliott lost gold valued at \$25.—Dr. P. H. Derby, Springfield, Mass., lost instruments valued at \$35, February 25.—Dr. A. Friedline,

Boise, Idaho, supplies valued at \$25, February 4.—Drs. Esson & Sturdevant, The Dalles, Ore., a large amount of gold, February 29.—Drs. Holloway and Polk, Corsicana, Tex., relieved of gold valued at \$50 and \$25, February 6.—Dr. E. J. Weeks, New Bedford, Mass., office entered February 14, gold and crown and bridge work valued at about \$100 taken.—Dr. Peter Sterling, Fall River, Mass., February 10, gold filling and platinum valued at \$50 taken.—Dr. Charles P. Kissle, Philadelphia, February 10, fifteen sets of teeth taken from showcase.

ILLEGAL PRACTITIONERS.—A dentist of San Francisco, Cal., convicted of practicing dentistry without a license, was fined \$50, February 18.—A dentist of Oakland, Cal., convicted of practicing without a license, was fined \$50, February 20. He will appeal.—A Russian resident of Boston was arrested for practicing without a license and fined \$50, February 14.—A dentist of Portland, Ore., arrested for practicing without a license, was fined \$50, February 22, and was again arrested for the same cause March 4. He claims he is being persecuted by the state board, who have refused to give him a temporary permit to practice until the examinations are held in May, and that there are fifty-six other unlicensed dentists practicing in Portland who are immune from the prosecutions of the board.

BRETHREN HONOR DR. R. R. ANDREWS.—Dr. Robert Robbins Andrews of Cambridge, dentist, author and scientist, was given a banquet at the Hotel Somerset, Boston, Feb. 29. Seated at the tables in the grand banquet hall were 200 prominent dental surgeons from all parts of New England and from distant parts of the country. Present by the proxy of letter, telegram or cable, were men whose names are famous in the field of science in the continent of Europe, the United States and Canada. The date of the banquet was chosen as being the 50th anniversary of Dr. Andrews' start in life as a dental apprentice. During the banquet a massive silver loving cup was presented to Dr. Andrews. The speech of presentation was made by Dr. Eugene H. Smith of the Harvard Dental School.

DENTAL CARIES DURING PREGNANCY.—Dental caries occurring during pregnancy, or otherwise, may be due to a combination of systemic and local factors or simply to local causes. A pregnant woman is temporarily chlorotic, and her mucous membranes weaker—that of the mouth in particular being less resistant, and bleeding upon the slightest stimulation—and she unconsciously fails to care for her teeth as frequently as circumstances may demand. Consequently salivary deposits become more abundant, food débris accumulates in the interproximal spaces, and undergoing fermentation gives rise not only to caries, but likewise to that form of inflammation of the oral mucous membrane which has been designated by the term *stomatitis of pregnancy*.

On the other hand, the presence of disorders caused by a faulty metabolism, particularly during the first months of gestation, often results in the secretion of an oral fluid of a high percentage of acidity, which, acting upon the enamel of the teeth, causes fissures and imperfections in the hard-tissue covering, and this, of course, renders the teeth extremely liable to

the action of caries-producing organisms. The prophylactic treatment should consist in carefully scaling and polishing the teeth at regular intervals, and also in the use of alkaline mouth-washes or tooth-powders.

Regarding the oft-discussed question of performing dental extractions during gestation, the author argues that such operations should be postponed until after delivery, particularly if the subject be of a highly sensitive temperament, and if her clinical history should include instances of abortion, accidental or spontaneous.—E. AUWERS, *Dental Cosmos*.

OBJECTION TO IMMEDIATE ROOT-FILLING.—I do not believe that immediate filling of the root-canal should be attempted after removal of the pulp by pressure anesthesia, for the reason that the cocain not only anesthetizes the pulp, but a considerable area of the soft tissues at and adjacent to the apical foramen, so that, when filling the root, there is no way of determining when the end has been reached, by reason of these tissues being devoid of sensation. If the operator uses a method and has the skill to fill roots to the end, he will find, if he fills immediately, that he is more than likely to carry the root-filling into the soft tissue beyond the apical foramen, thus causing the patient much discomfort, and, perhaps, the loss of the tooth from continued irritation.—A. J. COTTERELL, *Dental Brief*.

SUICIDES.—Charles H. Stadlinger, a prominent dentist of Buffalo, N. Y., committed suicide by shooting, February 17, 1908. Ill health and overwork are given as the cause.—George R. Wright, Jr., a dentist of Auburn, N. Y., committed suicide by inhaling illuminating gas, February 28, 1908. Despondency caused the deed.—Edward J. Thompson, a dentist of Waltham, Mass., committed suicide by taking poison, February 15, 1908. He had been despondent for some time and it is believed his mind was deranged.—Oscar L. Bumiller, a dentist of St. Louis, Mo., committed suicide by taking carbolic acid, February 9, 1908. He had become despondent through suffering from locomotor ataxia.—George H. Lloyd, a wealthy retired dentist of New Haven, Conn., committed suicide by swallowing carbolic acid, February 19, 1908.

NITROUS OXID THE ANESTHETIC OF CHOICE IN MANY MAJOR OPERATIONS.—One of the most recent and authoritative advocates of nitrous oxid anesthesia in major surgery is Arthur Dean Bevan, M. D., of Chicago, who, in an address, as chairman of the Section on Surgery of the American Medical Association, reports that during the last three or four years he has used nitrous oxid and air as an anesthetic in a large number of cases and that finding how easy it is to maintain satisfactory anesthesia for long periods has gradually increased the range of its use until he now employs it in a large proportion of his surgical operations. Nitrous oxid is the anesthetic of choice in reducing fractures and dislocations, in opening abscesses and felons, in breaking up adhesions in joints, in draining empyemas and lung abscess, in exploratory laparotomies, in gall-bladder work, removing stones and drainage in kidney work, nephrotomy, nephrectomy and nephrolithotomy; in bladder work, suprapubic cystotomy for stone and in suprapubic prostatectomy; in draining appendical abscesses, in colostomy, gastrostomy and

enterostomy; in repair of typhoid perforation and of perforating gastric and duodenal ulcers; in hernia operations, especially for relief of strangulated hernia; in varicocele and in open operation for hydrocele; in castration, in amputations, except the largest joints and in removing fatty tumors.

In the classes of cases here enumerated nitrous oxid is superior to other agents because of the great safety of the anesthesia, the rapidity of its action, the comfort with which the patient can take it, the freedom from nausea, the almost immediate recovery from the anesthesia, the great freedom from lung or kidney complication and from extensive fatty degenerations of liver, kidneys and heart which may follow chloroform anesthesia and to a less degree ether anesthesia.—*Journal American Med. Assn.*

TO CONTROL SALIVA.—An annoying operation to successfully perform is filling a lower third molar that cannot, for half a minute at a time, be kept free from saliva. Such a case presented in a young lady, of highly nervous temperament, whose flow of saliva was excessive. Placing the dam was impracticable, and napkins placed in the mouth would almost immediately become saturated. This annoyance was overcome through the action of atrophin sulphate, a dose of which (1-120 grain) I had her take three-quarters of an hour before her next appointment. At that time I found the mouth very dry, though not uncomfortably so for the patient. This salt of atrophin has a much better effect on the secretion than the ordinary alkaloid. Its manifestations last from four to five hours.—H. O. LOGUE, *Stomatologist*.

SUGGESTIONS FOR FLASKING RUBBER PLATES.—In the preparation of casts for the vulcanizing process we often make the mistake of saturating them with water after we have secured the cast, or in boiling out the wax. We ought never to do this; a plaster cast that is very hard and dense, if simply dropped into water for thirty seconds and taken out, can be whittled quite easily. If you have a very thin cast, it will soak up enough water in a short time to so destroy its integrity that it will break under the pressure put upon it in closing the flask.

In the matter of flasking these pieces, I have not yet found a flask that is at all to my notion—none of them are deep enough. You cannot put into any of the brass flasks on the market an ordinary cast, with the teeth on it, and have more than perhaps half an inch of plaster over the palate, where the great amount of pressure is usually brought to bear. Sometimes casts are cut down at this point to possibly one-eighth of an inch, so that if they be held up to the light one can almost see through them. You cannot expect a cast of that kind to stand the enormous pressure of two tons—which Dr. Prothero says is frequently put upon it—without its fracturing. The support that you get from the investing plaster is not sufficient to support such a thin cast. If it could be made thick enough it would well withstand the pressure without giving way.

The flasks should be about three-fourths of an inch deeper than they are. In connection with packing the flask another thing might be mentioned. Dentists usually close them in boiling water and put in so much rubber

that they cannot possibly get the flask together, and then boil for ten or twenty minutes to get the vulcanite to flow away in order to effect the closing. This boiling of the plaster must destroy its integrity.—N. S. HOFF, *Dental Register*.

ADJUSTING A LOGAN CROWN.—After grinding the root to the desired shape, select a crown of suitable shade and size and grind away the palatal portion. Now fit a platinum disk No. 38 gage to the end of the root; punch a hole in the disk with a mandrel of the same diameter as the pin of the Logan crown. Readjust the disk until the fit is perfect, and force the pin through the disk to its proper place. The latter will hold the pin with sufficient firmness. Porcelain body is now placed in the V-shaped space between the disk and the ground palatal surface of the crown. When the bakings are completed, and the correct contour obtained, the platinum is removed.

By this method the complete strength and beauty of the Logan crown are retained, and an absolutely perfect joint secured. No investment or soldering is necessary.—J. D. PATTERSON, *Western Dental Journal*.

SODIUM DIOXID.—Most dentists have used sodium dioxid more or less, and its properties are now generally known; only a word will be said, therefore, concerning its use, and that is, be careful what you use it with, and use small quantities. *Never*, under any consideration, must it be placed in a tooth together with phenol or glycerin, unless the dentist wishes to have a small pyrotechnic display. Phenol and glycerin are totally incompatible with sodium dioxid, and if a little water happened to be mixed with the glycerin, the almost explosive effect would be intensified tenfold. Anyone can try the experiment in a test tube.

Nothing more need be said, save that the rubber dam should always be applied to protect the soft tissues, sodium dioxid being the most powerful and rapid escharotic the writer has ever seen, its action being rapid, penetrating, utterly disintegrating and hardly to be controlled.—BERNARD BENNETTE, *British Jour. Dent. Science*.

EXCISION OF SOFT TISSUE BEFORE TAKING AN IMPRESSION FOR PLATES.—A feature of very great importance, in my opinion, is the excision of flexible ridges of soft tissue which we so often find in upper mouths, where the teeth have been out for a number of years. I have a roll of such tissue in my pocket which I brought here to exhibit, not particularly because it is in itself interesting, but rather because of the history of the case. Four practitioners had attempted to make plates for this patient unsuccessfully, and two of them made more than one, but all without success. The patient was referred to me, and the first thought that came to my mind was the excision of that soft ridge of tissue. This was immediately done under nitrous oxid, and in three weeks a plate was inserted that was absolutely perfect. I am not complimenting myself, as the plate was made by one who had previously tried without success, and the achievement was due only to observing a detail that was necessary in that case, because it was almost an absolute impossibility for anyone to get an accurate impression with that

soft ridge of tissue present, and even so the plate would always have been susceptible to movement under pressure.—HART J. GOSLEE, *Dental Review*.

OBESITY, GOUT AND DIABETES MELLITUS CONSIDERED AS DISEASES OF CELL METABOLISM TRANSMISSIBLE BY INHERITANCE.—Wilhelm Ebstein of Goettingen places obesity, gout and diabetes mellitus in one group, that of hereditary diseases of cell metabolism. The close relation of the three diseases is evident, and the frequent occurrence of all in the same subject. All are to be traced to a certain deficiency in cell activity. The victim of obesity is unable to consume the fatty acids that result from metabolism in the same degree as the normal individual. The cause of gout is to be sought for in a disturbance of the intermediary stage of metabolism, especially that of the nucleins, growing out of inherited tendency. Diabetes shows a deficiency of carbonic acid excretion, the property of this gas to inhibit the action of diastatic enzymes making it a regulator of the formation of sugar from the glycogen stored up in the body. The sugar is more or less completely excreted before it can be assimilated by the organism. These diseases are seen to result from a primary defect of the cells and each one may be traced to a change in the biogens different in localization and character.—*Medical Record*.

EXAMINING BOARD AFFAIRS.—The first conviction in California for practicing dentistry without a license under the law passed in 1907 making the introduction of a dentist's sign the only evidence necessary to show that the defendant was engaged in practice, was secured February 18. A photograph of the office door bearing a dentist's sign was responsible for the conviction after the dentist had admitted that he was without a license.—Private detectives, supposedly in the employ of the State Board of Dental Examiners of Colorado, are said to be working on the sympathies of young women assistants in dental offices to secure information, which may lead to the revocation of the licenses of dentists. These assistants, who are unlicensed, are not permitted to operate on teeth. Consequently the detectives enter the parlors when the dentists are out and, appearing to be in severe pain, work upon the sympathies of the girls, and they almost invariably administer soothing lotions.—Members of the Board of Registration in Dentistry of Massachusetts appeared before the Committee on Public Health recently in favor of a bill to amend the dental registration laws by permitting the board to consider the moral character of applicants, and providing that any person or corporation advertising to perform dental operations may be subject to fine unless registered. The bill also gives the board power to suspend or revoke the licenses of dentists who are guilty of malpractice.—Governor Floyd of New Hampshire has appointed Dr. H. R. Beals of Keene a member of the state board to succeed Dr. Fred H. Brown of Lebanon, whose term expired October 27, 1907.—Drs. E. B. Edgars of Seattle and C. S. Irwin of Vancouver have been reappointed members of the State Board of Dental Examiners of Washington.—A notice of appeal has been filed from the order of Judge Kennon appointing a receiver for the State Board of Dental Examiners of Washington, in the action brought

against the board by Attorney S. R. Stern to recover about \$1,500 for services. The bond on appeal was fixed by the court at \$1,500.—Dr. A. C. Wherry, secretary of the Utah Board of Dental Examiners, has filed his annual report with the Governor. Fifteen licenses to practice dentistry were issued during the year, but seven of the number decided later to leave the state and the fees had to be returned, as provided by law. Dr. Wherry thinks this provision of the law unwise. Six prosecutions for unlawful practice were instituted and five convictions were secured. The financial statement of the board is as follows: Cash on hand at the beginning of the year, \$226.24; fees, \$640; total, \$866.24; disbursements, \$705.25; balance on hand, \$161.

HOW THE BRAHMAN CLEANS HIS TEETH.—When the Brahman cleans his teeth he must use a small twig cut from one of a number of certain trees, and before he cuts it he must make his act known to the gods of the woods. He must not indulge in this cleanly habit every day. He must abstain on the sixth, the eighth, the ninth, the fourteenth, the fifteenth and the last day of the moon, on the days of new and full moon, on the Tuesday in every week, on the day of the constellation under which he was born, on the day of the week and on the day of the month which correspond with those of his birth, at an eclipse, at the conjunction of the planets, at the equinoxes and other unlucky epochs, and also on the anniversary of the death of his father or mother. Anyone who cleans his teeth with his bit of stick on any of the above-mentioned days will have hell as his portion.—“*Hindoo Manners*,” by ABBE DUBOIS.

DIATORIC TEETH IN BRIDGE WORK.—Diatoric bicusps and molars can be advantageously used in bridge work, getting rid of the unsightliness of gold cusps, leaving the tooth all its strength, and in case of a breakage, which is very unlikely, it can be repaired in the mouth. The technique which I have adopted is about as follows: After a tooth of the required size and proper shade has been selected, grind the under lingual side, that there may be no pocket under the gold for lodgment of food, and in order to give the desired angle. Fill the hole in the diatoric with modeling compound or plaster, dressing down to a smooth surface with the tooth; press the ground side of the tooth in moldine that it may leave an impression of the ground side, extending up about the thirty-second of an inch on all sides except the lingual, allowing the moldine to come up nearly to the cusp on that side. Make a die of Melotte's metal from this impression and strike up a gold plate. Trim the gold to lap snugly over the buccal edge and well up on the approximal and lingual sides. After this is satisfactorily trimmed and burnished to the tooth, with the plate punch make a hole over the center of the opening in the diatoric tooth; clean out the plaster or modeling compound and fit a wire of iridioplatinum in this hole in the tooth. Place the gold plate back on the tooth and thrust the wire through the gold and up in the tooth. Secure by waxing pin to gold, chill the wax and remove, being careful not to disturb the wire in its relation to the gold plate; invest and solder the wire to the gold on the waxed side; the

wire may now be cut off and dressed down level with the tooth. Place in position on the articulator, and when satisfactorily adjusted and waxed to place the diatoric tooth may be removed and the case invested and soldered, building in solder sufficient to leave a firm and unyielding seat for the tooth. After the case is finished the tooth is cemented to place and the gold bur-nished around the edges.

By this method the unsightliness of gold cusps is eliminated and the cement protected by the nice fitting of the gold, which assures its lasting; and in case of a possible accident, such as the fracturing of the teeth in the mouth, by keeping a record of the number of the mold, make of tooth and shade, another can be substituted which will fit as accurately as the first and without removing the bridge from the mouth.—D. T. HILL, *Dental Brief*.

OPERATIONS FOR CLEFT PALATE AND THEIR RESULTS; ESPECIALLY IN RE-SPECT TO THE IMPROVEMENT OF SPEECH.—The conclusions that G. Hudson-Makuen comes to are that an operation for the closure of a cleft palate should be done only when there is a fair likelihood of success; it should be done only by those possessing special skill in nasopharyngeal and oral surgery; when it is probable that several operations may be necessary the parents or patient should be so informed; the operation should be done as early as possible; in the difficult adolescent cases the operation, after a preliminary tracheotomy, may be preferable; there are two reasons for attempting to close a cleft palate, namely, to improve the general health of the patient, and to increase the efficiency of the faculty of speech; the general health of the patient is benefited in two ways, namely, by im-proving the hygiene of the nasopharynx and the oral cavity and by im-proving the general morale of the patient; the speech is improved by a course of psychophysis training in which the patient is taught first to rec-ognize normal speech, and then to make the best use of his still imperfect organs in its production.—*Medical Record*.

CAST GOLD INLAY REVOLUTIONIZING.—I want to give you a few instances where it has revolutionized my practice.

Six years ago a gentleman came to me for work and had two disto-occlusal cavities in the second upper molars of both sides that extended up above the gum. I was unable to get the dam over the cavity and could do nothing but insert amalgam fillings. I restored the interproximal space and retained the contact as best I could with these fillings. A month ago that gentleman came in and complained of food being retained between the teeth during mastication. I found that a facet was worn on the amalgam filling, and instead of a globular form I had a flat surface by reason of the natural movement of the teeth. I took out those amalgam fillings and made a wax inlay and restored the contact point just as I wanted it and made inlays that were absolutely perfect, as far as I could see, and charged that man four times as much as for the amalgam fillings, and he told me it was worth the price because so satisfactory. That could

not have been done with any other form of filling. A burnished inlay could not have done it.

Another case was a gentleman with a fractured lateral incisor, where the labial fracture extended above the process. There remained the lingual wall of the tooth. I packed that gum with guttapercha until it exposed the uppermost portion of the fracture. I took an impression in wax, also including the surface of the fractured root, then placing a pin into the root as far as I could, I cast the three in one. On that foundation I adjusted a porcelain faced crown, and there are a few in this audience who saw that work, and I am satisfied it could not have been done in any other way.—C. E. BENTLEY, D.D.S., *Dental Review*.

OUR BROTHER, THE DENTIST.—Not so very many years ago the calling of the dentist was considered a business rather than a profession. His work was extractive and destructive and only a few pioneers sought to preserve and even to construct serviceable grinders. But today all that is changed. Dentistry is today decidedly a science and a profession, and one much more essential to healthy living than it is generally given credit for. Many a systemic infection has resulted from decayed teeth, the cavities of which make excellent foci for germ propagation. In the case of a citizen from the West, some twenty-six varieties of bacteria were found in a particularly malodorous buccal cavity. And the proper chewing of food, which is so essential to normal living, is, of course, impossible unless the teeth are sound. Particularly in sufferers from tuberculosis, whose restoration to health depends upon proper alimentation, one can expect few good results when the teeth and their alveoli are in a pathologic condition. Again, in trigeminal neuralgia, the dentist and the physician must often unite in treatment.—*Medical Times*.

USE THE RUBBER DAM IN TREATMENTS.—The fact that the pulp chamber is already full of microorganisms is no excuse for operating without the rubber dam, nor for using an instrument or broach that is not sterile. Neither does it appear to me to be good practice to treat a tooth by partially sealing the medicine in or by puncturing the stopping with which the cavity has been sealed, as by either method the contents of the pulp chamber is certain to become infected from the mouth. In the treatment of infected cases by surgeons, more serious results are apt to occur from the ingress of extraneous organisms than from a failure to remove all of the organisms and their products that were previously present. The reason for this is that the system has already adapted itself to a greater or less degree to the toxins of the existing infection, and if assisted by the relief of pressure and partial removal of the pus and organisms, will be able to overcome the remainder; certain changes have taken place in the fluids of the body to counteract or neutralize the toxins of the particular infection, but these changes have no similar effect against the toxins of another organism; therefore the new infection meets with slight resistance and becomes more serious than the old.—A. D. BLACK, *Dental Review*.